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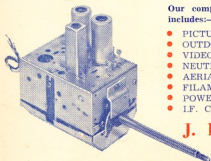
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2442.5 Kc.	5655.333 Kc.	6300 Kc.	6900 Kc.	7225 Kc.
2443 Kc.	5700 Kc.	6325 Kc.	6925 Kc.	7250 Kc.
2732 Kc.	5722.222 Kc.	6350 Kc.	6950 Kc.	7275 Kc.
2760 Kc.	5725 Kc.	6375 Kc.	6975 Kc.	7300 Kc.
2979 Kc.	5744 Kc.	6400 Kc.	7000 Kc.	7325 Kc.
2990 Kc.	5750 Kc.	6425 Kc.	7002.5 Kc.	7350 Kc.
3380 Kc.	5775 Kc.	6450 Kc.	7003 Kc.	7375 Kc.
3500 Kc.	5825 Kc.	6475 Kc.	7005 Kc.	7400 Kc.
3533 Kc.	5850 Kc.	6497.5 Kc.	7010 Kc.	7425 Kc.
3535 Kc.	5852.5 Kc.	6500 Kc.	7011.75 Kc.	7450 Kc.
3537 Kc.	5875 Kc.	6522.9 Kc.	7012 Kc.	7475 Kc.
3892 Kc.	5900 Kc.	6525 Kc.	7018 Kc.	7500 Kc.
3925 Kc.	5925 Kc.	6547.9 Kc.	7021.7 Kc.	7525 Kc.
4096 Kc.	5950 Kc.	6550 Kc.	7025 Kc.	7550 Kc.
4172 Kc.	5975 Kc.	6561.111 Kc.	7032 Kc.	7575 Kc.
4205 Kc.	6000 Kc.	6575 Kc.	7035 Kc.	7600 Kc.
4285 Kc.	6025 Kc.	6600 Kc.	7050 Kc.	7625 Kc.
4445 Kc.	6050 Kc.	6625 Kc.	7075 Kc.	7650 Kc.
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# AMATEUR RADIO

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All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

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**VK8WI:** Sundays, 1000 hours EST, simultaneously on 3.5, 7, 14 and 144 Mc. Individual frequency checks of Amateur Stations given when VK8WI is on the air.

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## EDITORIAL



One of the outstanding features of any organisation operated by voluntary workers is that quality we know as loyalty.

In the Wireless Institute of Australia most of our honorary voluntary helpers are loyal in their attention to duty and it is refreshing to see how they carry on each year in the various departments in which they serve the general membership.

It is not uncommon and it is certainly refreshing to find men of outstanding ability in their technical, administrative or business activities giving such costly, loyal and continuous service over a period of many years in Institute affairs.

Sometimes we hear of members criticising certain executive officers of Divisions, Federal Council, or Federal Executive with the remark: "Oh he has been in the job too long."

Although such comments are considered to be fair and reasonable, especially by those who set themselves up as critics, it would only be sensible to pause a while and ask whether this long service does not reveal and demonstrate the loyalty of the person under attack.

Most organisations where honorary workers spend their time and exert their talents for the good of the general membership, have certain officers who, through long years of service, possess very valuable knowledge and experience which is essential to the constitutional operation of the society which they serve.

Of course the successful society is one whose members, by constitution-

al means, see to it that on each of their executive groups some new blood is injected from time to time, but nevertheless a stabilising effect can only be obtained when the society retains amongst its councillors a fairly large proportion of "elder statesmen" whose memory of past experiences are used to stabilise the actions of the future.

We have heard it said that "so and so" has been in the job too long, but let us be sure that we don't get rid of him before we can replace him with someone of equal experience in his specialist field and in particular find his replacement by one of comparable loyalty and mature judgment.

Members of the Wireless Institute of Australia have ample constitutional means to rid themselves of any individual who is inefficient or who uses his position for financial gain, but let us remember that most honorary officers serve for the "love of the game" or because they believe in Ham Radio as a national asset and not because they desire personal elevation or public acclaim.

The matter of course rests with each Divisional member; if your Council, Federal Councillor, or Federal Executive is disloyal, inefficient, or lacking in experience or business acumen the fault is yours, you can alter the position by appropriate action at meetings, but keep in mind the vital question—"Will the new man be loyal over the years?"—before you change the officer in question.

FEDERAL EXECUTIVE.

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# Conversion of the AT5 for 80-40-20-15-10 Metres

BY D. C. HABERECHT,\* VK2RS

WITH an apparent never-ending supply of these particular transmitters, and at a price which I feel sure would make the original manufacturers shudder, the question arose whether it is possible to convert them to Amateur use. In their original state they do quite a reasonable job on 80 and 40 metres, however the fact that above this, doubling in the p.a. is employed, it was considered that some considerable modification would be desirable to obtain better efficiency, a consideration which today on our very crowded bands was deemed necessary. It was decided that the following features would be included:

1. Simple conversion, i.e. without a complete re-build.
2. Straight through operation on all bands up to and including 10 metres.
3. A more suitable and more efficient p.a. tank circuit.
4. Some degree of harmonic attenuation in an effort to reduce the possibility of t.v.i., etc.

If all these features are to be included it would appear that it would need some really exhaustive modifications, however this is not the case, the complete job can be done in a couple of evenings, with only a few additional components required.

One point which I feel should be made known at this point, it is assumed that the I.F. portion is no longer required. Some of the components used in this section are removed, whilst others are re-used in the modifications.

## CONVERSION

### Stage 1—The V.F.O.

Locate the 4-5 Mc. oscillator coil. From the top end of this coil bridge or short out four turns. Remove the trimmer across the coil, adjust the iron-core so that 7.2 Mc. is tuned with the tuning condenser wide open. If this is still not tuning to the desired range remove or short out another turn. Some adjustment may here be necessary depending on the model. Incidentally, this coil is readily accessible as will be seen when all covers including the base plate are removed.

These modifications do not appear to effect the stability of the circuit. Long term tests by the author have proved the stability to be well within the Amateur's requirements.

### Stage 2—First Buffer-Doubler

Remove all wiring from the socket of the 6V6 modulator stage with the exception of the filament, cathode and wiring to pin 6. This stage is then modified by the following method to become a buffer-doubler.

- (1) Remove the plate connection from the 807 buffer stage and re-connect to the plate pin of the 6V6.
- (2) Connect the screen to the screen supply of the 807 buffer, at the same time parallel a 40K resistor across the 807 screen dropping resistor.

(3) Remove the 50 ohm grid stopper from the 807 grid; extend the pigtail and bring across to the 6V6 grid pin.

(4) Connect to ground the cold end of the original cathode by-pass condenser and resistor. These you will find mounted on the resistor strip above the valve sockets.

This then completes this stage. It will be seen that in effect all we have done is transferred the original 807 buffer circuit to the new 6V6 stage.

### Stage 3—Second Buffer-Doubler

(1) Connect a 100 pF. condenser from the plate of the 6V6 buffer to the grid of the 807, at the same time connect a 40K resistor from grid to ground.

(2) Remove all wiring from the I.f. oscillator tuning condenser, not forgetting three small condensers attached to the underneath side of the double gang

(7) Return cathode bias resistors to ground through a keying jack if this has not already been done.

(8) Construct a 5-turn coil from 14 or heavier gauge copper wire, diameter of 1" and spaced to approximately 2" overall. Attach this to the rear end of the tuning condenser, preferably at the point where the 1,000 pF. condenser from plate to the tuning condenser is connected. The other end of the small coil is allowed to remain free until such time as the p.a. coil has been modified and re-fitted.

**Modifications to P.A. Coil.**—From the rear end of this coil remove all turns up to the first tap position, remove all connections to the rear switch section (this is no longer required). The first tap position (from rear) then becomes the 80 metre switch point and is returned to the first switch position. On the last switch point or 10 metre position the whole of the large coil is switched out of circuit and the 5-turn coil previously constructed is wired to this position. On 15 metres approximately one turn of the large coil is

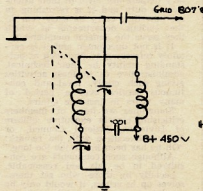


Fig. 1.—807 Buffer All-Band Circuit.

condenser. These are a little difficult to remove, due to their inaccessibility.

(3) Construct the all-band coil (described in Fig. 1) and connect as shown. It is possible to mount this coil vertically between the 6V6 buffer and 807, keeping the leads to the tuning condenser as short as possible.

### Stage 4—Final

(1) Remove p.a. tank coil and the two block condensers immediately accessible when the coil is removed.

(2) Remove all plate circuit wiring with the exception of the copper plate cap leads.

(3) Construct the p.a. r.f. choke (Fig. 2). Attach this to the bolt carrying the plate leads.

(4) Connect a 1,000 pF. 1 kv. condenser from the plate to the p.a. tuning condenser.

(5) From the lower end of the r.f. choke connect a 1,000 pF. by-pass condenser (1 kv. rating) to ground. From this point also connect a 25K 10 watt resistor to the screens of the 807s, at the same time remove the 0.1 μF. screen by-pass condensers and replace with 1,000 pF. condensers. Do not remove the screen stopping resistors.

(6) Remove screen circuit wiring to the on/off switch located near the aerial terminal.

added; the switch point for 15 metres then will be found at one turn from the front end of the coil. The 20 metre switch position is a further 4 turns from the 15 metre point. The 40 metre point will be found near to mid-way between the 80 and 20 metre points.

It is best to leave the final location of the various positions until the coil has been re-fitted and you are ready to test the set. For the best results the

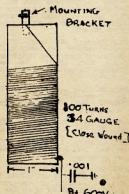


Fig. 2.—P.A. R.F. Choke.

\* 805 Abercorn Street, South Albany, N.S.W.

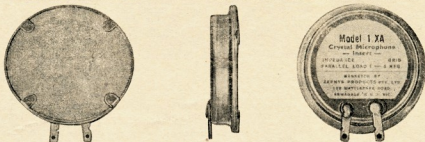




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- The only unit available with a genuine sintered metal filter.
- Good high frequency response ensures excellent speech reproduction.
- Aluminium diaphragm mechanically protected and frequency controlled by "Zephyril" filter.
- Australian made throughout.
- Only carefully selected cements used throughout, to suit Australian climatic conditions.

## TECHNICAL DETAILS

Rochelle salt crystal microphones are perhaps the most widely used for all types of service where quality speech and music reproduction at high output levels is a requirement. They are dependable in performance and when fitted with the appropriate "Zephyril" filter, their frequency response may be adjusted to suit any application or requirement.

This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved.

Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspension pillars, being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case  $1\frac{1}{2}$ " diameter (rear),  $\frac{3}{8}$ " thickness, 1-13/16" overall diameter (front) with filter fitted.

Frequency Response = 60-6,500 c.p.s.  
Output Level = -45 db (0 db = 1 volt/dyne/cm<sup>2</sup>)  
Impedance = Model 1XA Grid 1 — 5 megohms.



Approximate Frequency Response Curve

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# Modifying the AR7 Receiver

## PART ONE

BY G. M. BOWEN,\* VK5XU

### GENERAL DESCRIPTION

A communication receiver, based on the H.R.O. design, this receiver covers from 138 Kc. to 25 Mc. with a break at 410 Kc. to keep clear of the 455 Kc. i.f. channel. Five sets of coils contained in removable coil boxes cover this range. Tuning range ratio for A, B, C and D coil boxes is approximately 3:1 whilst E range covers from 12.5 to 25 Mc.

The receiver has eight valves, this including a double triode (6C8G), one half operating as a v.t.v.m. for the "S" meter, and the other for the b.f.o. circuit. The set I believe was originally designed around high gain pentodes but the shortage of overseas supplies made it necessary to use 6U7Gs, as r.f. and i.f. amplifiers, a 6J8G as converter, and a 6G8G coupled to a 6V6G for the audio stages.

A very good crystal filter in a balanced tuned type of phasing network enables signals as close as 200 c.p.s. to be attenuated below nuisance strength when the filter is correctly aligned. (Quite a few sets being sold at present have had the crystal removed from the small mounting box!)

The input to the first r.f. stage can be used with a balanced transmission line or alternatively one side can be bridged to earth and a single wire attached. The latter arrangement gives the best results for all band coverage for short wave listening.

Two r.f. stages give a large attenuation of second channel interference which can be a decided nuisance on the 14 Mc. band with the high powered broadcast stations on the 15 Mc. band.

No fancy circuitry is found; all sections follow well tried and trouble-free designs. The noise limiter is what it says and is not a noise suppressor of the lamb type and it reduces noise and signal to a common level. This is done by reducing the screen voltage on the 6G8G—first audio—to a point where saturation occurs on positive peaks and cut-off on negative peaks.

The power supply enables the set to be operated from the a.c. mains or from a 12 volt accumulator. It is separated from the receiver as is also the speaker. A pair of 6X5GT valves with plates paralleled ensures a very high degree of regulation, under mains fluctuation.

A study of the circuit will show that a.v.c. is applied to the first audio valve (6G8G) and this is done to achieve a certain amount of muting when there is no signal together with a much more uniform output of the audio signal. The 6V6G is coupled to an output transformer mounted on the chassis and this has output windings for the permag. speaker and the phones.

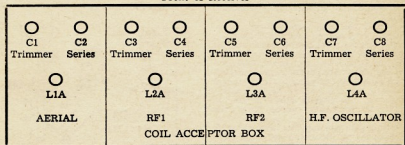
Quite a few receivers coming onto the Disposals market are performing very poorly and a common fault seems to lie in the misalignment of the crystal filter stage. When this is by-passed (leaving only the 1st i.f. and 2nd i.f. stages) the sensitivity of the receiver

● With this article we introduce a series relating to the popular AR7 Receiver. This part of the series gives a general description of the equipment and details of "lining it up."

To those particularly anxious to improve the AR7, the series is especially recommended. You will be taken, stage by stage, through the entire receiver, being shown what steps should be taken to make the receiver comply with present day requirements.

To those who feel that modifications to commercially built equipment are not justified, this, the first article, should appeal. We warrant you will, eventually, make all the modifications to be described!

Front of Receiver



improves remarkably. However, it should be possible to have the filter correctly aligned, but it needs the use of a wobulator and a c.r.o. to really do the job properly. Even then it takes up to four hours!

The controls are the usual ones found on this type of receiver and they are well labeled on an etched stainless steel escutcheon overlaid onto a steel panel. The dial mechanism should be checked to see that it has no play, before attempting any calibrating; the worm gear is spring loaded and although it may be worn, when it is cleaned up, greased with vaseline and the tension on the springs increased, the play should disappear.

The heaters of the valves are operated from a 12 volt winding on the transformer or are switched to the 12 volt d.c. input when operating from battery supply. Hence the series parallel connections to the sockets as follows: The two r.f. valves; the converter and the 1st audio (6G8G); the two i.f. valves; the 6V6G and the 6C8G, with a 42 ohm resistor across the heater of the 6C8G to allow 0.45 amp. to the 6V6G heater.

Delayed a.v.c. is obtained by rectifying the signal obtained from the plate of the 2nd i.f. valve and fed to one diode of the 6G8G. This connection reduces the loading on the secondary of the i.f.t., gives a higher voltage and

isolates to a degree the b.f.o. input which is fed via a small trimmer condenser to the second diode. It is thus possible to operate with the b.f.o. and a.v.c. on, if an alteration is made in the switching. (See modification.)

Following usual practice a.v.c. is applied to both r.f. and i.f. stages as well as that mentioned already. The converter has no a.v.c. applied for obvious reasons. A 5,000 ohm potentiometer, in series with a 50,000 ohm bleeder resistor, affords separate manual control for the r.f. and i.f. stages and operates independently of the a.v.c.

The overall sensitivity of the set should be less than 2.5 microvolts input at any frequency for an output of 50 milliwatts measured across a resistance of 100 ohms connected to the "phones" jack.

Adjustments to the coil units are made through the holes in the coil acceptor housing and are marked L1 to L4, C1 to C8 (see diagram).

- L1—Inductance adjustment on aerial coil.
- L2—Inductance adjustment on first r.f. coil.
- L3—Inductance adjustment on second r.f. coil.
- L4—Inductance adjustment on h.f. oscillator coil.
- C1—Aerial trimmer.
- C2—Series trimmer (Coil E only).
- C3—1st r.f. trimmer.
- C4—Series trimmer (Coil E only).
- C5—2nd r.f. trimmer (mixer input).
- C6—Series trimmer (Coil E only).
- C7—H.f. oscillator trimmer.
- C8—Padder, series condenser on h.f. oscillator coil for coils A, B, and C. Series trimmer (Coil E only). Coil D uses a fixed padder.

### ALIGNMENT PROCEDURE

Extreme accuracy is required in the alignment of the i.f. circuits. Slight misalignment of these i.f.t.s. will have a marked effect on the sensitivity and selectivity of the receiver. They are permeability tuned with an iron-dust core and there is quite a deal of movement either side of resonance, which makes aural checking almost useless.

A very stable signal generator or a Bendix BC221 are suitable instruments.

(Continued on Page 6)

\* 73 Portrush Road, Toorak Gardens, S.A.



## Modifying the AR7 Receiver

(Continued from Page 5)

Remove the grid cap from the converter valve and connect the output of the signal generator through a 500 pF. and return the grid to earth through a 100K resistor. Connect the grounded side of the signal generator lead to the receiver chassis. Short out the oscillator gang to stop heterodynes from external signals getting into the i.f. channel and causing spurious readings.

Having checked to see that the crystal still in the receiver—remove the small corner of the shielded section near the right hand side of the front panel—set the receiver controls as follows:

Crystal switch to IN; selectivity control on zero; phasing condenser to centre scale; a.v.c. switch to a.v.c. position; tone control on 10; r.f. gain on 8; noise limiter on 10; audio on 6; b.f.o. condenser to centre. Set the "S" meter adjustment to a suitable value that can be read easily.

Vary the frequency of the signal generator until the maximum reading is obtained in the "S" meter, indicating that the frequency is exactly that of the crystal. Leave the signal generator alone and switch out the crystal filter.

Adjust the iron cores; those above chassis level are grid circuits, below the plate circuits. Make quite sure that all movement is positive and that there are no loose slugs, etc. Leave L5A, the crystal filter transformer grid circuit, well alone for the present (this appears beneath the chassis and is the nearest screw to the chassis side). Align the i.f.'s in the usual order from the converter to the second detector.

To check whether the xtal filter is obtaining the signal generator plus and minus 5 Kc. of the setting and note whether the reduction in signal strength reading in the "S" meter falls off symmetrically. If it does, then do not meddle with any part of the filter circuit; if it doesn't, then tread warily. Leave it alone for another occasion!

Now to the r.f. amplifiers and h.f. oscillator. If there is any reason to doubt the mechanical construction of the coils and their trimmer condensers (and if you have just got them from Disposals there is every reason), remove the coil shields from the structure and then the coil and condenser assembly carefully. Do not expect to find all the connections identical. Note carefully on paper the way that the connections are made and save yourself a headache later.

With coils A, B, C and D the alignment procedure is the usual low frequency inductance and high frequency trimmer adjustment that can be found in any handbook. Coil E has neither padder nor inductance adjustment since the series condenser will perform the necessary band spreading.

In Coil E, the series trimmer C8 is adjusted instead of L4 to obtain the correct oscillator range; C2, C4 and C6 are adjusted at the low frequency end of the range and C1, C3 and C5 at the high frequency end.

Since Coil A covers a band which very few Amateurs are interested in, this article will deal with the conversion of this unit to operate from 25 to 35 Mc.

## Type 3 Mark II. Receiver

### Adding A.V.C. and Audio Volume Control

BY G. M. BOWEN,\* VK5XU

THOSE of us who are fortunate enough to own one of these receivers realise what wonderful little sets they are for mobile work as well as for standby shack receivers. However, they were never designed to receive phone signals and therefore a.v.c. was not incorporated. This fact, for Amateur work, is likely to cause the loss of one's eardrums when tuning over the band if we have the gain control on maximum and land on an S9+ signal.

Having had this happen to me a few times, the circuit was studied for an easy way to add a.v.c. It was quickly ascertained that the gain control was not the usual cathode bias type, but used a back-bias system and a 50K potentiometer (VR1). An isolating 470K resistor (R6D) connects this gain control line to the grid circuits of the two i.f. valves.

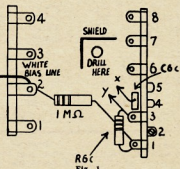


Fig. 1.  
C6C is 0.001 μF. condenser and R6C is 150K resistor. Tag No. 2 (right hand strip) is earthed.

Getting the little grey cells to work, it was reasoned that a 2 megohm resistor connected from the bottom end of the third i.f.t. to the "bias" line on the other side of the resistor (R6D) would do the trick. Each one of us is loath to dive into the inside of a commercial receiver, but after much delving around to find R6D and the junction of R1D (1 megohm) and R6C (150K), it was discovered that a 1 watt resistor with its nice long leads fitted exactly between the two tie points (see diagram).

Subsequently it was found that a 1 megohm resistor worked better than the 2 megohm one. With the chassis upside down and the control panel away from you, you will see two solder tag strips running at right angles to the front panel. On the left one there are four soldered connections, and on the right, eight connections at the top nearest to you.

Simply solder the 1 megohm resistor between the two soldering positions as shown in the diagram and a.v.c. is yours.

To really obtain the benefit of a.v.c. the r.f. gain control needs to be at maximum, or nearly so, and hence some form of audio volume control is needed. This modification is not quite so easy, but is still "a piece of cake" as we say! The most important item is a 500K miniature potentiometer and these are now available—mine is a Ducon with a diameter of one inch.

Drill a hole, immediately above the b.f.o. condenser, in the front panel to take the potentiometer, allowing enough clearance for the cover to be replaced when the operation is over. Mount the pot with its solder tags facing towards the central division screen. Now, with the chassis upside down again refer to diagram and then find the small shield around the second i.f. valve socket. Drill a hole as shown large enough to take two shielded leads from X and Y up to the potentiometer.

Lead X solders to the moving arm (centre solder tag) of the pot. and Y to the maximum in the usual volume control circuit arrangement. Disconnect C6C from the solder tag (No. 4 in diagram) and attach to the lead X. Do not forget to earth the braid and the potentiometer in the usual manner.

Now, connect up the receiver and note the vast difference you have succeeded in getting.

A further improvement can be had by diving into the power supply and soldering a 250 ohm 3 watt resistor in parallel across the bias resistor that you see attached to the output sockets. Now that you have a.v.c., it is unnecessary to have such a high value of fixed bias on the valves and the gain on weak signals is very much improved.

Do you need a switch to short out the a.v.c. when receiving c.w.? No! The r.f. gain control (marked volume on the knob) is backed off until the bias is high enough on the valves to stop the action of the a.v.c. and the audio volume control is then adjusted for comfortable level.

If you need proof that the a.v.c. is working turn the meter switch (on the tx of course) into position 1 and note how the receiver voltage rises and falls with the signal strength.

Don't be worried by the fact that the 500K potentiometer is in parallel with the detector diode load R1D (a 1 megohm resistor) for I found by experimenting with isolating condensers that there was no measurable difference whichever way I had the circuit. Since the above method is the easiest and works well, I leave it to you. The 500K potentiometer can be replaced by a 1 megohm one as the value is not critical.

\* 73 Portrush Road, Toorak Gardens, S.A.

## A SIMPLE CAPACITY BRIDGE FOR THE BLIND

BY A. W. DUFFIELD, ZL2DT

WITH a keen interest in Radio, such as it was in my school days, I suppose that it is only natural that I would become interested in Ham Radio. I passed the necessary examination and was issued with the call ZL2DU. After about five years' activity other interests were developed and this call was allowed to lapse and the station was dismantled.

At the re-opening of the Amateur bands in 1945 I again became interested and was issued with the present call of ZL2DT. However, six months later I had the misfortune to lose most of my sight. At this time I was living at Foxton Beach, but after coming out of hospital, I came back to Palmerston North to live with my parents.

At first, time hung heavy on my hands, but as my Ham gear began to drift back from the beach, I found a new interest in Radio.

It was quickly realised that new methods of construction would have to be evolved, particularly in soldering by touch. During this period considerable swearing ability was also developed. For some time a standard type of electric iron was used but later a quick heating type was bought and better and less painful soldering was done. No restrictions were placed on my building of equipment except that all live spots had to be completely shielded against accidental contact.

My remaining sight was slowly deteriorating and in about three years my meters were useless to me even with the magnifying glass. My thoughts turned towards a transmitter which would not need tuning up every time I wanted to change bands. A broad-band switched exciter was built to give output on 3.5, 14 and 28 Mc. This unit worked into separate buffers and finals for each band. Though this outfit

worked quite well, it was irksome that I had to get someone to check the meter readings.

I replaced the commercially made frequency meter with the home-made touch-reading one which has already been described in "Break-In." When information was received via the Braille Technical Press, on auditory meters, a multi-tester of this type was built.

Some trouble was experienced in obtaining the necessary accurate resistors for this job, but, with the co-operation of local Amateurs and Dealers, a selection was made. Though the principle is simple, the results are amazing. This unit gave voltage readings up to 1,000 at 20,000 ohms per volt. Current readings are from 1 amp. down to a tenth micro-amp. Resistance readings are from 1 ohm to 10 megs. There are eight ranges to each use. Very precise measurements are possible and the accuracy is mainly governed by the accuracy of the resistors used in its construction. This instrument, together with a simple capacity bridge, solved my colour-code problems. An auditory continuity checker which will show continuity up to several thousand megs, is also a useful piece of gear.

During the past eight years, practically all the alterations to the rig have been confined to the r.f. section and the ease of change from band to band has been the major consideration. About two years ago work was started on the present rig. The exciter unit measures  $6 \times 6 \times 10$  inches and uses four 12A6s and a 6255. At the turn of a switch it will give output on any of its five bands. This unit also houses an auditory meter which reads the voltages of the five power supplies together with grid and plate currents of the larger tubes.

The final uses a pair of 24Gs. The final tank condenser is the result of a

lot of thought and work. It comprises five rotors and ten stators and two neutralising condensers built around a five position two pole band selection switch. Each pair of stators has its own coil and the condensers are set and left tuned to the part of the band most used.

This rig is modulated by a pair of 1625s in Class AB2. A 3-position switch gives c.w., phone and tune-up positions.

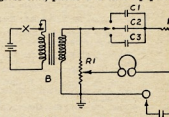


Fig. 1—Capacity Bridge.

C1—2  $\mu$ F.  
C2—0.02  $\mu$ F.  
C3—0.0002  $\mu$ F.  
R2—200 ohms.  
B—ZC1 buzzer.

### CAPACITY BRIDGE

As I was having trouble sorting out condensers, my thoughts turned toward a meter which would give me some assurance that I had picked out the right one for the job. The following unit was built, though it has now been replaced by a combined capacity inductance bridge.

The reading is taken with a pair of headphones when a null is produced by the balancing of the bridge. It is powered from a pair of torch cells driving a ZC1 buzzer.

As standards, three ordinary "run-of-the-mill" condensers were used. When checking electrolytics, the variable resistance R2 in series with the standards is set to give the best null and is left in the minimum position at other times. The balancing potentiometer should be a linear wire wound job and the resistance value is not critical.

The highest output tap on the buzzer was used. The signal in the phones in out of balance condition on the two high capacity ranges is very high, and it would be a good idea to make the range switch a double pole affair so that a lower tapping could be used or resistances switched into the circuit on these ranges.

The unit was built into a box  $5 \times 5 \times 2\frac{1}{2}$  inches with the balancing pot near the centre with about a 3 inch diameter scale. When calibrating the instrument, values equal to the standard condensers will fall close to the centre of each scale, but the stray capacity will probably shift the lowest range somewhat.

### AN INVITATION

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The Club meets at Bedford Corner Hotel, Bayley Street, Tottenham Court Road, Friday of each month at 12.30 p.m.

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# AMATEUR CALL SIGNS

FOR MONTH OF JANUARY, 1957

## CHANGES OF ADDRESS

- VK— New South Wales  
 2KG—K. H. Greenhalgh, Garden Grove Pde., Adamstown Heights.  
 2ML—R. M. Ellison, 17 Station St., Corralville.  
 20Z—W. E. Dixon, Piccadilly, West Market St., Richmond.  
 2PT—A. Stephenson, 10 Sketchley Pde., New Lambton.  
 2XD—K. F. Williams, "Kenmar," Knights Rd., Galston.  
 2AFH—C. W. R. Holman, 24 Wyong Rd., East Lambton.  
 2ALQ—J. M. Brennan, 9 Boronia St., Dee Why.  
 2AOB—R. B. Digby, 23 Bolwarra Rd., Narrabeen.  
 2APH—E. A. Hayward, 21 Bellamy St., Penant Hills.  
 2ASY—S. A. Sibby, 23 Panamara Rd., Kingsgrove.  
 2AXD—E. A. Druiett, 13 Curtail St., Griffith.  
 2ZCH—A. K. Hore, Allambie Rd., North Manly.  
 Victoria  
 3KU—B. D. Clarke, 154 Nell St., Greensborough.  
 3QG/T—P. P. Smith, 132 Peel St., North Balarat.  
 3YH—R. V. Fisher (Cpl.), R.A.A.F. Unit, Wertheim.  
 3AGI/T—D. W. G. Grove, 4 Wood St., Hampton.  
 3AIN—L. Grant, 1 Donald St., Burwood.  
 3AMC—J. McDonald, 22 Glenbrook Ave., East Melbourne.  
 3ANC—N. H. M. Chapman, C/o. P.O. Mirboo North.  
 3APK—P. A. Perkins, 28 Arthur St., Rdmont.  
 3AXX—N. E. Turnbull, 24 Bethall Ave., Parkdale.  
 3ZBJ—G. S. Jennings, 66 Laura St., Ascendale.  
 3ZCF—I. B. Fraser, 109 Adair St., Ballarat.  
 Queensland  
 4LC—J. L. Currie, King St., Caboolture.  
 4DY—E. Wright, 44 Garden St., Stones Corner, Brisbane.  
 4SN—F. H. Shannon, 16 Tongue St., East Ipswich.  
 South Australia  
 5JE—E. J. Cawston, 40 Seaford Ave., Somerton Park.  
 Western Australia  
 5EE—R. R. Elkin, 24 Alfred St., Leederville.  
 6ZAO—R. G. Smith, 4 Clause St., Willagee.  
 Tasmania  
 7SD—D. M. Smith, 77 Hampden Rd., Hobart.

## CANCELLED CALL SIGNS

- VK— New South Wales  
 2ZBJ—G. Jenkins (Sgt.), Transferring to Vic.  
 Victoria  
 3HN—E. W. Martin.  
 3HQ—K. J. Duff.  
 3RO—R. J. Biddle.  
 3AFB—J. J. Baty, Now VK2ANB.  
 3AHX—C. W. R. Holman.  
 3AKM—A. K. McLennan.  
 3AND—N. T. Buchanan.  
 3ZBO—R. E. V. Crowe, Now VK2ZBO.  
 Queensland  
 4GP—D. A. Crowley, Now VK3LJ.  
 4SK—S. S. St. George, Now VK2AUS.  
 South Australia  
 5ZAI—A. D. Nutt, Transferring to N.S.W.  
 Western Australia  
 6JY—B. Bellringer.  
 Tasmania  
 7ZAW—P. Woodruff, Transferring to Vic.  
 7GM—A. G. Kirmse, Now VK3AGK.  
 Territories  
 1RB—R. Dowden.

## PERMITS GRANTED FOR TELEVISION EXPERIMENTS

- VK— New South Wales  
 3LZ/T—W. E. C. Bischoff, 4 Buena Vista Ave., Wentworth Falls.  
 2SD/T—L. W. N. Squires, 27 Fletcher St., Bondi.  
 2ZCF/T—C. F. Norman, 23 Queen St., Croydon.  
 Victoria  
 3TU/T—J. F. Irvine, 258 Balwyn Rd., Balwyn.

FOR MONTH OF FEBRUARY, 1957

## NEW CALL SIGNS

- VK— New South Wales  
 2AHL—W. A. Lewis, 437 Woolware Rd., Bur-ranget.  
 2AKW—G. H. Humphrey, 28 Davidson Ave., Concord.

- 2ATF—A. Field, 12 Merris St., Belmore.  
 2ATP—K. E. Peters, 40 Howard Ave., Dee Why.  
 2ZBN—A. D. Nutt, 13 Austral Buildings, Anzac Parade, Maroubra.  
 2ZDP—E. A. Phillips, 194 Princes Highway, Sutherland.  
 Victoria  
 3ED—F. D. Smith-Wescott, 40 Queens Ave., St. Arnaud.  
 3ASA—L. R. Schulz, 174 Nelson St., Nhill.  
 3AVA—R. S. Mackie, 6 Cromwell St., Caulfield.  
 3ZAP—P. Woodruff, C/o. 19 Brunell St., Essendon.  
 3ZCI—W. L. Tremewen, Ferndale Ave., Upwey.  
 3ZCN—G. L. C. Jenkins, Noble St., Noble Park.  
 3ZCO—L. M. Stone, 18 Douglas St., Rosanna.  
 3ZDN—R. M. Macrae, 1 Symonds St., East Hawthorn.  
 Queensland  
 4RP—Air Training Corps, R.A.A.F. Perry Park, Brisbane.  
 4ZDR—D. W. Rickard, Meyer St., Southport.

## CHANGES OF ADDRESS

- VK— New South Wales  
 2ML—R. M. Ellison, The Grange, Kings Rd., Cobarbong.  
 2MP—M. E. Ploffer, 59 Cox St., Windsor.  
 2VP—R. A. Blades, 2a Boronia St., Balgowlah.  
 2ANE—Eastern Command Signal Regt., Gormley St., Lidcombe.  
 2ANP—Hedge, Naval Amateur Radio Station, R.A.N. Air Station, Nowra.  
 2AQC—P. R. Ladd, 21 Walworth Ave., Newport.  
 2AVB—R. W. Pratt, 27 Chapman St., Klamia.  
 2AWI—Wireless Institute of Australia (N.S.W. Div.), Quarry Rd., Dural.  
 2AWY—W. O. Yates, 87 Kite St., Orange.  
 Victoria  
 3AAI—N. K. J. Felstead, 92 Haldane St., Beaumaris.  
 3AGK—A. G. Kirmse, Lot 15 Canterbury Rd., Heathmont.  
 3AJQ—J. R. Kling, Lot 8 Cassia Gr., Frankston.  
 3ARB—R. A. Bourchier, 241 Clarke St., Northcote.  
 3AUW—S. D. Wheeler, 31 Barnard St., North Kew.  
 3AUX—G. R. Hughes, 2 McMillan St., Elsternwick.  
 Queensland  
 4GG—G. Heilbronn, South St., Millmerran.  
 4ZJ—J. L. Kane, 61 Toombul Rd., Northgate.  
 South Australia  
 5FX—P. J. Harper, 17 Second St., Keith.  
 5KD—J. F. Dawson, 8 Fairfield Rd., Elizabeth South.  
 5OC—L. O. C. Baker, Old Belair Rd., Belair.  
 5PO—A. M. Perriman, 7 Fourth Ave., Klemzig.  
 Western Australia  
 6FL—F. C. Lambert, 63 Second Ave., Bassendean.  
 6LA—L. C. Allen, 189 Lockhart St., Sth. Como.  
 Tasmania  
 7CA—M. A. Chaplin, 54 Bald Hill Rd., Trevallyn.  
 7DC—D. H. Clifford, 4 Shasta Ave., Moonah.  
 7ZAG—W. G. Grewling, 14 Keynasham Rd., Claremont.

## CANCELLED CALL SIGNS

- VK— Australian Capital Territory  
 1APW—A. F. Pyett.  
 New South Wales  
 2TC—L. G. England, 48 Hardy St., Ashfield.  
 2AIV (Portable)—W. H. Kennedy.  
 2ATN—F. G. Barron.  
 Victoria  
 3FD—D. Burkitt.  
 3ACO (Portable)—D. A. Greenham.  
 Queensland  
 4FA—A. Field, Now VK2ATF.  
 South Australia  
 5WG—G. N. Covan.  
 Tasmania  
 7BL—B. E. Lloyd, Transferred to Victoria.  
 7ZAH—L. J. Hodgkinson.

## PERMITS GRANTED FOR TELEVISION EXPERIMENTS

- VK— New South Wales  
 2CL/T—L. H. Taylor, 48 Hardy St., Ashfield.  
 2ZLT/T—N. MacNaughton, 50 Killestone St., East St. Ives.  
 2AGO—R. C. Wilson, 31 Glenview St., Greenwich.  
 2AHH/T—N. A. Hanson, 3 Ryan Ave., West Kempsey.  
 2ANF/T—J. R. C. Miller, 21 Sutherland St., Lane Cove.  
 Victoria  
 3YS/T—F. G. Ball, 62 Shannon St., Box Hill.

# Ross Hull Memorial Trophy V.H.F. Contest Results

Outright and Trophy Winner:  
 VK3ALZ.

## Awards:

VK3ZAO (L.A.O.C.P.)  
 VK5ZAM (Call Area and L.A.O.C.P.)  
 VK7PF (Call Area)

## Scores:

VK3ALZ	....	934	Points
VK3ATN	....	896	"
VK3ZAO	....	774	"
VK3ZAT	....	544	"
VK3ZBE/AEL	....	428	"
VK3ZAE	....	349	"
VK3ZD	....	294	"
VK3ZBS	....	271	"
VK3YS	....	240	"
VK3ZCG	....	215	"
VK3OJ	....	163	"
VK5ZAM	....	285	"
VK5BC	....	184	"
VK7PF	....	213	"

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50 Mc.—

	Date	Miles
VK5KL-WTACS/KH6	26/8/47	5355
VK2RU-JAIAHO		4854
VK4NG-JAIAHS	22/1/56	4145
VK6HK-VR2CG	3/1/55	3928
VK6BW-VR2CG	3/1/55	3816
VK9DB-ZL3GS	26/12/53	2804

56 Mc.—

What Records?

144 Mc.—

VK5GL-VK6BO	..	30/12/51	1321
VK5QR-VK6BO	..	9/2/52	1319
VK3ZCW-VK7LZ	..	18/2/57	512
VK3GM/3-VK7LZ/PF	..	9/3/52	317

288 Mc.—

VK5MT/3-VK5RO/5	..	13/4/52	109
VK3AFJ/3-VK3AAF/3	..	21/3/54	64

576 Mc.—

VK3ANW-VK3AKE	..	11/12/49	81.6
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2300 Mc.—

VK3ANW-VK3XA	..	18/2/50	9.1
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# VK5AE TO OPERATE AT HOBBIES' EXHIBITION IN ALICE SPRINGS

In conjunction with the Alice Springs Youth Centre's Hobbies' Exhibition, which is to be held on 6th May, it is the intention of local Amateurs to instal a working exhibit.

The station, which will operate on telephony in the 14 Mc. band, will use the call sign VK5AE (that of Mr. F. A. Eastick, of Alice Springs). Operators will be VKs 5AE, 5EW and 5TL.

As 6th May is a local holiday (Northern Territory only) it is intended that the station shall be staffed during the afternoon and evening; the show being a one-day fixture.

Amateurs are requested to look out for VK5AE and line up many QSOs thus showing how effective Amateur Radio can be to the public present at the Exhibition.

Arrangements are being made for a Special QSL card to be provided for all contacts.



# VALVE DATA

## 6AL5

### TWIN DIODE

The Radiotron 6AL5 is a miniature twin diode which, because of its high pervance, is suitable for use as detector in circuits utilising wide band amplifiers. It is particularly useful as a ratio detector in television receivers, where its low internal resistance makes it possible to obtain increased signal voltage from a low impedance diode load.

Each diode has its own plate and cathode base-pin connections and can, therefore, be used independently of the other or combined in a parallel or full wave arrangement.



## GLORAD

### 5 WAY PLUGS AND JACKS

as used on our Kitsets and Industrial Equipment are now available in two grades.

**Black Bakelite Mouldings:**

**PLUGS 10/6, JACKS 8/6.**

**Natural R.F. Quality Mouldings:**

**PLUGS 11/-, JACKS 9/6.**

Physical Size:

3½" long, ¾" wide.

★

Available direct or from  
William Willis Pty. Ltd.

★

## GLORAD

### ENGINEERING SERVICES

291a TOORONGA ROAD,  
MALVERN, S.E.6, VIC.

Phone: BY 3774

The resonant frequency of each unit is approximately 700 Mc.  
Base: 7 pin miniature.  
Socket connections:  
Pin 1—Cathode of Diode No. 1.  
Pin 2—Plate of Diode No. 2.  
Pin 3—Heater.  
Pin 4—Heater.  
Pin 5—Cathode of Diode No. 2.  
Pin 6—Internal Shield.  
Pin 7—Plate of Diode No. 1.

#### Electrical Data

Heater Voltage ..... 6.3 volts  
Heater Current ..... 0.3 amp.

#### HALF-WAVE RECTIFIER

**Maximum Ratings:**  
Peak inverse voltage .. 330 max. volts  
Peak plate current per plate ..... 54 max. Ma.  
D.C. output current per plate ..... 9 max. Ma.  
Peak Heater-Cathode Voltage:  
Heater negative with respect to cathode .. 330 max. volts  
Heater positive with respect to cathode .. 330 max. volts

#### Typical Operation:

A.C. plate voltage per plate (r.m.s.) ..... 117 volts  
Min. total effective plate supply impedance ..... 300 ohms  
D.C. output current per plate ..... 9 Ma.

## 6AQ5

### BEAM POWER AMPLIFIER

The Radiotron 6AQ5 is a miniature beam power pentode designed primarily for use as the output valve in a.c. operated receivers. Within its maximum ratings the performance of the 6AQ5 is equivalent to that of the larger type 6V6GT.

Base: 7 pin miniature.

Socket connections:  
Pin 1—Grid No. 1.  
Pin 2—Cathode, Grid No. 3.  
Pin 3—Heater.  
Pin 4—Heater.  
Pin 5—Plate.  
Pin 6—Grid No. 2.  
Pin 7—Grid No. 1.

#### Electrical Data

Heater Voltage ..... 6.3 volts  
Heater Current ..... 0.45 amp.

#### CLASS A1 AMPLIFIER

**Maximum Ratings:**  
Plate voltage ..... 250 max. volts  
Grid No. 2 voltage ..... 250 max. volts  
Plate dissipation ..... 12 max. watts  
Grid No. 2 input ..... 2 max. watts  
Peak Heater-Cathode Voltage:  
Heater negative with respect to cathode .. 90 max. volts  
Heater positive with respect to cathode .. 90 max. volts

#### Typical Operation:

Plate voltage ..... 250 volts  
Grid No. 2 voltage ..... 250 volts  
Grid No. 1 voltage ..... 12.5 volts  
Transconductance ..... 4100 μmhos  
Plate resistance (approx.) 52000 ohms  
Plate current (zero signal) ..... 45 Ma.  
Grid No. 2 current (zero signal) ..... 4.5 Ma.  
Load Resistance ..... 5000 ohms

Power output (max. signal) ..... 4.5 watts  
Total harmonic distortion ..... 8 %  
**Maximum Circuit Values:**  
Grid No. 1 Circuit Resistance:  
For fixed bias ..... 0.1 max. megohm  
For cathode bias ..... 0.5 max. megohm  
operation

## C.D.E.N. NEWS

Your Federal Co-ordinator had a long and interesting interview with the Director of Commonwealth Civil Defence, Brigadier Wardell, M.C. During the interview the Director expressed great interest in the Institute's activities and requested full information on all Institute activities together with map showing location and call sign of all members of the C.D.E.N. He also pointed out that in order to make full use of C.D.E.N.'s potentialities it was essential for Divisional Co-ordinators to have a complete and up-to-date picture of the operational state and ability of equipment.

In order to enable your Divisional Co-ordinator to prepare the required information you are requested to immediately send the following information to him:

- Whether you are prepared to serve as full time member of C.D.E.N., that is, take part in all activities.
- If not able to serve as full member are you prepared to become casual member, that is, make your services and/or equipment available in an emergency.
- Give details of equipment including power and frequencies covered. (a) fixed, (b) portable, (c) mobile, (e) power supplies.
- Provide names of additional operators available in an emergency. Thereafter to keep him informed of any changes.

A copy of the proposed Authorisation Card for C.D.E.N. Members was submitted to the Director who promised to bring it to the attention of the State Authorities who are responsible for implementation of Civil Defence plan, at the appropriate time. Details of the Card will be published when Federal Council has given its approval to the final draft. This we hope will be given following the Federal Convention.

The next Communications Study Period will be held at the Commonwealth Civil Defence School at Mount Macedon in May. Apart from Institute Divisional representatives who will be invited by the States, your Federal Co-ordinator will be present at the personal invitation of the Director to represent Federal Executive of the W.I.A. during the discussion period.

In order to ensure prompt publication in this column of any emergency activity members are requested to send story direct to Federal Co-ordinator with a copy to Divisional Co-ordinator for his information.

## IONOSPHERIC PREDICTION CHART

Owing to circumstances beyond our control we are unable to print any predictions this month.

# 1956 VK-ZL DX CONTEST RESULTS

## AUSTRALIA

C.W.—	Total	40	20	15	10
Call					
VK2GW	4136	164	1441	1639	892
2QL	2848	158	1207	740	743
2BA	2311	—	1632	679	—
2JY	1080	—	—	1080	—
2JX	791	—	—	—	791
VK3PG	3750	—	1172	1584	894
3DQ	1873	168	378	961	366
3ALZ	1317	—	—	644	673
3AHB	942	—	942	—	—
3XB	728	458	270	—	—
3HL	546	—	546	—	—
3RJ	179	—	179	—	—
3CX Check Log.					
VK4SD	837	—	837	—	—
4DI	533	—	—	533	—
VK5DK	2431	—	1507	566	358
5MY	1185	—	1185	—	—
5WO	1098	—	255	573	300
5JT	420	—	143	125	152
5RX	365	—	365	—	—
5RK	203	—	203	—	—
VK6RU	3308	59	1215	1040	994
6UF	690	—	690	—	—
VK7UW	3130	—	1421	1699	—
7KM	1623	308	874	441	—
7LZ	1514	29	281	412	792
7RT	689	—	689	—	—
7CH	557	—	557	—	—
7WA	105	—	—	105	—
VK9DB	4600	—	922	1769	1909
9XK	3309	272	922	1018	1097
9OQ	1243	—	1243	—	—

Band Leaders (C.W.)—	Total	40	20	15	10
All Bands—VK9DB	4600	pts.			
40 mx—VK3XB	458	pts.			
20 mx—VK2BA	1632	pts.			
15 mx—VK9DB	1769	pts.			
10 mx—VK9DB	1909	pts.			

PHONE—	Total	40	20	15	10
Call					
VK1PM	678	173	505	—	—
VK2AHH	1252	116	797	339	—
2AOU	997	898	99	—	—
2JY	89	—	89	—	—
2XY	72	72	—	—	—
VK3ALZ	932	131	279	522	—
3ADW	881	178	221	482	—
3VF	144	—	—	144	—
3ARJ	119	30	—	—	—
VK4DI	554	—	554	—	—
VK5LC	1684	824	237	623	—
5DK	439	439	—	—	—
5WO	332	220	112	—	—
5AB	180	60	120	—	—
VK6 NIL	—	—	—	—	—
VK7PM	802	317	485	—	—
7WA	435	30	405	—	—
7AB	192	—	177	15	—
VK9DB	3083	408	1053	1622	—

Band Leaders (Phone)—	Total	40	20	15	10
All Bands—VK9DB	3083	pts.			
20 mx—VK2AOU	898	pts.			
15 mx—VK9DB	1053	pts.			
10 mx—VK9DB	1622	pts.			

LISTENERS—	Total	40	20	15	10
VK2—N. L. Dash	1441	pts.			
VK3—G. R. Morris	1354	pts.			
VK3—(WIA-L3017)	—				
E. W. Trebilcock (BERS195)	613	pts.			
VK4—C. H. Thorpe	1425	pts.			
VK7—R. de Balfour	1172	pts.			
VK9—P. Reid (SWL 0101)	216	pts.			

## NEW ZEALAND

C.W.—	Total	40	20	15	10
Call					
ZLIAH	5518	—	1985	1903	1630
1GX	1694	—	485	638	571
1AAMM	1601	—	974	—	627
1TB	846	—	846	—	—
1JG	686	686	—	—	—
1MQ Check Log.					
ZL2GS	3577	30	1058	1341	1148
2ET	2947	—	1199	977	771
2ARL	1741	—	831	709	201
2GX	1104	255	840	—	—
2AGD	758	—	—	758	—
ZL3HI	2088	86	1021	621	360
ZL4CK	2557	57	1894	606	—
4BO	1171	—	—	1171	—

Band Leaders (C.W.)—	Total	40	20	15	10
All Bands—ZLIAH	5518	pts.			
40 mx—ZL1JG	686	pts.			
20 mx—ZLIAH	1985	pts.			
15 mx—ZLIAH	1903	pts.			
10 mx—ZLIAH	1630	pts.			
PHONE—	Total	40	20	15	10
Call					
ZL1MQ	1508	431	642	435	—
ZL2AJB	1734	193	1150	391	—
2GX	162	162	—	—	—
ZL3 NIL	—	—	—	—	—
ZL4 NIL	—	—	—	—	—

Band Leaders (Phone)—	Total	40	20	15	10
All Bands—ZL2AJB	1734	pts.			
20 mx—ZL1MQ	431	pts.			
15 mx—ZL2AJB	1150	pts.			
10 mx—ZL1MQ	435	pts.			
LISTENERS—	Total	40	20	15	10
ZLIAH—B. D. Thomson	2344	pts.			
ZL111—C. N. Arvidson	831	pts.			
ZL302—J. B. Holder	1976	pts.			
ZL304—R. W. Gray	1048	pts.			

## OVERSEAS

North America	Pts.	W8LDD	Pts.
VE3ADV	4	W6ATO	988
W1PPN	231	K6DDO	576
W3WZ	2945	W6AFI	371
W2EGS	1250	K6LOM	84
K2GMO	200	K6BHM	56
W2GJD	190	W6CLZ	40
W2BOT	180	W7SFA	5421
W2KKT	35	W7TML	1664
W3VKD	4128	W8JIN	5031
W4LZF	2574	W8QXN Check.	—
W4KVX	525	W0JMB	144
W4LHT	563	W0JJY	1
W4DF	1650	Mult. Op.—	—
W5ZWR	77	K6CJQ	2550

South America	Pts.	YU6DJX	Pts.
PY1ADA	1224	YU5DE	144
PY1HQ	171	CE3AG	3094
PY4AO	9		
LUTAS	198		
Europe	Pts.	ON4PA	Pts.
OH4NT	874	ON4AU	800
OH3RA	322	F8MS	120
OH2XK	216	F8YZ	84
OH1T	99	F8DW	35
OH3UN	154	F3II	2
OH3OD	35	PA0VB	266
OH2KE	16	PA0VO	150
OH2VZ	4	PA0ZL	42
HG9QU	735	PA0RL Check.	—
HB9MO	640	DL1DX	2400
HB9MU	398		

DJ1BZ	1560	SM5LL	561
DL1QT	897	SM3AKW	360
DJ2BW	512	SM4BEC	240
DL1OW	56	SM4AU	160
DL1YA	30	SM3QJ	56
DL19X	4	LA1WF	66
G5RI	2880	LA4K	25
G6XL	1590	LA3DB	—
G2DC	1296	LA1K (2 op.)	252
G3AIM	570	ES2F	4
G2WQ	60	OY7ML	16
G3KAA	24	HA5KAG	36
G3WP	1	OK2KBE	36
OZ3FL	1200	YO3RD	364
OZ1W	725	YO3LM	20
OZ7SN	72	ZB1HKO	48
OZ7BG	45	CT1HQ	4
OZ4IM	25	EA2CR	30

		U.S.S.R.			
UA3KBA	..	25			
Asia					
JA3BB	..	1960	JA7AD	..	117
JA1VX	..	1323	JA7AZ	..	36
JA1ACA	..	1248	ODSLX	..	120
JA1CJ	..	704	VU2HF	..	234
JA5AI	..	284	VS1G	..	249
JA3BG	..	190	457MR	..	16
Africa					
FA9VN	..	608	ZSSU	..	1056
CR7BS	..	35	ZS4MG	..	168

PHONE—	Europe		
	Pts.		Pts.
OH5PE	1159	DL1DX	277
OH2OV	722	DJ2YL	200
OH5QN	150	G3TR	546
OH3RA	Check.	OZ3SK	1
HB9MU	35	LA5YE	528
HB9PU	30	SM5LL	20
ON4DH	126	CT1PK	234
DL1UX	880	HTDJ	110
DL1KB	348		

South America			
CX2AY	36	ZP5CG	312
CE3DY	780	ZP5JP	273
North America			
KL7RZ	28	W7SFA	1060
HLRZ	48	W8JIN	836
CE2OU	230	W8NXP	360
XO1DU	672	K9ALD	9
W3VKD	1200	W9KRL	153
W5ZWR	28	W0GEK	
K6LOM	40		
Africa		Oceania	
VQ4ERR	70	VR2BZ	361
Asia			
KA2FQ	924	JA1CO	1
JA3BB	42	VS2DO	1236

LISTENERS—						
Europe						
BRS20206	.....	1512	pts.			
BRS15622	.....	1199	pts.			
BRS19107	.....	616	pts.			
N. S. Beckett	.....	231	pts.			
YO2-476	.....	108	pts.			
NL 884	.....	36	pts.			
SM5-2735	.....	680	pts.			
OES-314	.....	96	pts.			
Germany						
Kradepohl	.....	120	pts.			
BERS929	.....	42	pts.			
U.S.A.						
Ben Adams	.....	260	pts.			
Japan						
Yamaguchi	.....	2106	pts.			

# RADIOTRON

## TELEVISION VALVE SERIES

The two most important requirements of the r-f amplifier of a TV receiver are high gain and low noise. High gain is necessary to provide good sensitivity and to ensure that at the converter grid the signal is large compared with the noise voltage. Low noise is important since under weak signal conditions the noise contributed by the stage may have the same amplitude as that of the signal.

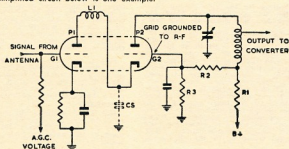
In addition the r-f amplifying valve should have:

- high input resistance to allow the antenna-to-grid matching circuit to step-up the impedance, and thus the voltage, from antenna to grid;
- low coupling between input and output circuit, to give both low oscillator radiation and good stability;
- suitability for a.g.c. application, i.e. should be capable of having its gain varied over a wide range by the a.g.c. voltage with as little disturbance as possible to input impedance or circuit tuning;
- small cross-modulation factor to avoid "sound on vision" or "vision on sound" effects and also to avoid interference by a strong adjacent carrier.

To obtain a low noise level it is not desirable to use a pentode because the random division of current between plate and screen results in a substantial increase of noise over that occurring in a triode.

A conventional triode amplifier however has the disadvantage of high coupling between input and output circuits which seriously limits the maximum stable gain and gives poor suppression of oscillator radiation.

The advantages of both triode and pentode are nevertheless obtainable in the "cascode" circuit which uses a high performance twin triode in a driven grounded-grid arrangement of which the simplified circuit below is one example.



L1 is series resonant with C<sub>s</sub> at frequencies above 220 Mc/s to produce low impedance between plate P1 and earth and hence reduce plate-to-grid feedback.

R1, R2 and R3 are adjusted to provide appropriate variation in bias on G2 as signal input and a.g.c. to G1 vary. C<sub>s</sub> is the stray capacity between cathode and earth.

The overall gain obtained in such a circuit is higher than that of a pentode, particularly at the 200 Mc/s end of the TV band because amplification is obtained from the two series-connected triodes and it is accompanied by the characteristically low noise of the triode. Good a.g.c. and cross-modulation are obtained with the circuit because as the a.g.c. voltage is applied to the grid of the first triode its plate voltage rises, thus increasing the bias necessary to cut-off its plate current, and at the same time, depending on the point to which the second grid is connected, increases the bias on the second triode. The overall effect of the a.g.c. voltage therefore is to make the cut-off characteristic of the 1st triode more remote and to obtain some control from the 2nd triode thus giving a smooth and effective a.g.c. action and freedom from cross-modulation effects. The circuit also allows very little oscillator radiation back through the r-f amplifier.

The Radiotron 6BQ7A has been designed for use in cascode circuits such as that described and has special shielding to produce low capacitive coupling between each half of the valve which this circuit requires. The valve also has a high ratio of gm to input-plus-output capacitance and to plate current, both of which are required for high gain and low noise.

† For further information on the 6BQ7A and other Radiotron Television Valves consult the Radiotron TV1 Booklet. Additional copies are available free and post free on request.



†  
**6BQ7A**

SOCKET CONNECTIONS



(bottom view)

- Pin 1 — Plate of Unit No. 2.
- Pin 2 — Grid of Unit No. 2.
- Pin 3 — Cathode of Unit No. 2.
- Pin 4 — Heater.
- Pin 5 — Heater.
- Pin 6 — Plate of Unit No. 1.
- Pin 7 — Grid of Unit No. 1.
- Pin 8 — Cathode of Unit No. 1.
- Pin 9 — Internal Shield.



**AMALGAMATED WIRELESS VALVE CO. PTY. LTD.**

47 YORK ST., SYDNEY

VCA/57.



# FIFTY-FIVE MEGACYCLES AND ABOVE

## NEW SOUTH WALES

On Sunday, 24th March, VK1WI was silent at the weekly broadcast time of 1930 hours, until about 1945 hours, due to the absence of John 2ATO who had gone bush, the Group's President. The broadcast came on the air and gave the broadcast in the usual 2WI style. Heard that 2VU is putting a good signal into Sydney and has regular skeds with 2HO on Tuesdays and Thursdays at 1200 hours from Singleton. Hugo 2WH, of Forbes, now has his 32 element beam re-erected. Ross 2PN, of Turleigh Park, is working on a 2HO.

At the general meeting of the Institute on 22nd March their members were again visited by the V.h.f. and T.v. Group where Dave 2ZAR, on the comparison of v.h.f. gear on 2ZAR a.f. gear on the transmitting side. Bob 2OA also presented his mobile gear for display.

A committee consisting of VK3 2ER, 2ANF, and 2ZBD has been formed to assist the Sydney Amateur Astronomers in their work during this International Geophysical Year, particularly in regard to providing the 2WH and 2ZBD with some sort of radio warning prior to the approach of the satellite which is to be released this year from Florida carrying a transmitter carrying a v.h.f. signal. At the 22nd March Group's April meeting (5th) Phil 2ZB outlined some of the work to be done by 2 mx Hams for I.G.Y. with 2SA of the 22nd March. He was pleased to hear from anyone who is interested in taking part.

2AFM was the fox for the night hidden tx hunt held on 21st March. Starters for the event were VK3 2ANF, 2ZBD, 2OA, 2AWZ, 2ZCF, and 2ZAL, who were also assisted by other Hams, garage-made XYLs and harmonies. The excitement was held until only one and one-half minutes before time had expired when Bob 2OA located the fox; Jim 2ZBD was lucky enough to provide the above information after announcement of location which was on a plateau near Deadman's Creek.

The next hidden tx hunt, which was scheduled for 28th March, was postponed until May when Bob 2OA will become the fox for that event, which will also start from Ashfield Park, west side.

ANU has been taken from his horse, "our understanding Ken is now well on the way to recovery. Ted 2XX has reported reception of Melbourne t.v. station HSV1 at his home. He has been able to receive it since 1st March. Haven't heard much of Ted since.

A progressive hide and seek fox hunt will be held commencing at 1000 hours at Ashfield Park and ending at 1600 hours on Sunday, 5th May. Be in it, it's fun!

The Autumn Field Day held on 31st March with the attendance and the following stations went mobile for the day as follows: VK3 2ANF, 2OA, 2YM, 2ZCF, 2ZCP, 2AFM, and 2HL. It has been estimated that about 43 city, portable, and country stations were on that day including north, south and west areas.

Visitors are always welcome to the Group's meetings which take place on the 1st Friday of each month. On Friday, 5th April, attendance was recorded of the following visitors: VK3 2ARG, 2ZBQ, 2CB, 2NT and 6ZAW—73 2AFM.

## VICTORIA

There was a very excellent attendance of approximately 40 at the March v.h.f. meeting to hear the lecture given by Les 3ZCN, ex-3ZJ, of the 2HO Equipment for the "Variable Band". Les travelled down from Ballarat to give the lecture and brought with him his own home-built f.m. equipment. Other visitors included Brian 3ZBS, Ian 3ZCF and Floyd Hoffman (WVVPD). Les gave a very interesting lecture amply illustrated with overhead blackboard diagrams of circuitry, which several of the members took advantage of by copying down for future reference. Les then gave a working demonstration of the "Variable Band" and was most convincingly the superiority of f.m. reception over a.m.

A lengthy discussion took place on the running of fox hunts in the future and several suggestions were put forward. The outcome of which is that the competitors will all take turns at being fox and will each make the runs in the same order. The next fox hunt meeting in about 12 months time, a further discussion will be held to decide which ideas have proved the most successful. The next fox hunt will be on April 1st; in May the fox will be Tom 3AOG, in June Reg 3ADU, July, Jacques 3ZEE, August, Roy 3ARY, and September, Ted 3ZBN. The 22nd March night will arrange the final location either at his own home or the home of an Amateur

friend, or if neither of these channels are available, the final location will be held at the home of Len 3LN.

The supper arrangements will be as before, everybody bringing their own thermos of tea and a small plate of eats. This has always worked out very well and saves the burden of providing supper for a large crowd by the XYLs concerned.

Ted 3AEH, down at Geelong, has been busy during the past few months building a television rx and is starting to get satisfactory results. He only has the small 5 inch screen, but is getting a good picture. You've got to be an amateur to get the real DX on 2 mx. Ben 3RK has a sked each morning at 7 a.m. with 3ZAM, whose frequency is 144.4 Mc, and manages to make a contact with him most mornings. He also has contacts with 3BC at that unearthly hour too and usually the signals are 89 plus both ways. Ian 3ALZ is another one who is capturing the real DX on 2 mx. Ian prefers to work late into the night. Ian's conquests include 3ZAM, 5CJ, 3ZAG and 2BS. Ian also works quite a bit on 1 mx. His best contact has been with 3ZED in Edinburgh, a distance of approximately 30 miles.

Melbourne Amateurs should keep a watch out for the Ballarat boys as there is someone on from Ballarat every night looking for Melbourne contacts. 2 stations, ABV2 and ABV3, every night between 8 and 8.30 p.m. beaming towards Melbourne. Peter 3ZDP in Sale has been working Melbourne for some time and is another one to look for. Phil 3ZAW was heard working portable round the streets of Melbourne on his way through to Sydney. Tom 3AOG a visitor of interest recently in Bill 3L3PK.

The office-bearers for the V.h.f. Group have been re-elected for another term. They are President, Herb 3JO, and Secretary, Bob 3OJ.

An interesting item of news has been received from the 2 mx band in Western Australia. He tells us that a friend of his, an electronics engineer, a Mr. A. Jackson, of Invercargill, South Island of New Zealand, has received contacts with 2 stations, ABV2 in Sydney, and ABV3 in Melbourne, and has been able to photograph very clearly the reception received. ABV2 is a very experienced and excellent conditions and reception of both picture and sound lasted for the whole evening. Personalities were clearly recognisable. Mr. Palmer has received contacts with 2 stations, ABV2 by Mr. Jackson and which he states are very excellent. The air-line distance between ABV2 and Invercargill would be in the vicinity of 1,000 miles.

The March V.h.f. Field Day was very successful; on the 2 mx band there were at least 9 stations out portable and 6 portable stations operating on the 1 mx band. Many good contacts were made on the 2 mx band which included some with the VKs. David 3ZAQ reports that at least 15 stations were operating on the 1 mx band counting the home stations. David has now replaced the feedline to his beam which is 5 ft. lower than originally and he is again working 3WI Sunday morning broadcasts on 283.5 Mc. He is using horizontal polarisation and the beam is usually north-west, and he would appreciate reports on these transmissions.

The results of the Field Day are as follows: 1st, Reg 3ZAD, with 3,095 pts., including bonus points for the three longest contacts on 2 mx (with 5CJ 289 miles, 3ZAM 265 miles, and 3NN 265 miles). Second was Ray 3ZAR, with 1,648 pts., which included 121 bonus points for the three longest contacts on 1 mx—3FL Moncur.

## SOUTH AUSTRALIA

News to hand that the matter of publishing predictions charts to incorporate frequencies higher than 28 Mc. will be considered, this information is available from the service but is not in "A.R." form. Some final work is crossed, chaps, for it will be useful. (The Prediction Service has been requested to include higher frequencies on the chart. Am awaiting reply.)

Had a wire from David 3ZAM on March 20 advising temp. inversion ideal that day for contacts between him and Renmark at 9 plus, and given time he would be beaming north. Sorry, but I was out of the country at the time though we identified and heard your carrier, we could not get any modulation from it. Sorry Tom 3AOG, but I was out of the country at the time. The news this way. Had you been on as it we could have made it.

Talking about a.s.b. on 2 mx, contacted WYTH (by letter, not a.s.b.) and gave "CQ" some information on this subject and he was keen enough to write at great length and give full details of how he did it and what advantages a.s.b. provided on v.h.f. He had two identical tx's finishing with 8203 in ball, both using same power supply and antenna. He was getting a.s.b. going, let spiders have the a.m. job. He states that a.s.b. has provided a means of holding constant skeds over 190 miles since March 1956 right through the year.

Intend to give this a go from here some day and if it passes it, in the meantime if anyone is interested will be pleased to hand on the main points.

A couple of extra frequencies to add to last month's list: Leo 3ZAG 144.53 Mc., Gordon 3XU 144.128 Mc.

Leo 3ZAG is building a new modulator to fill that envelope and then intends proceeding with matching final to complete the issue. Dave 3ZAM made the grade with Col 8RO and with 3ZAD at distance of 200 miles. Good weather, the weather map wouldn't stay still for a while or so.

Col 5CJ mainly on 2 mx those days and getting about. Allen 3AEL paid the Mount a visit recently and looked the boys over. A week or so ago Keith 5MT and Col 8RO set out to make gear at Mount Lofty and were successful. A 3 el. beam was used from Keith's mobile tx and by using his home converter was able to work Dave 3ZAM at Penola, 380, 3ZAG 127 miles, Ben 3EN, Hughie 5BC, and 3CW. They heard a number of other frequencies but didn't identify them. The time spent was from 1930 to 2000 hours, a really successful hour.

By the time you read this Bill 3ZAX will have his "xmas tree" finished, in that a GZU is going to top the 60 ft. tower, thence 16 el. co-linear on 2 mx and topped by 32 el. beam on 2 mx that will be 85 ft. up. That will really look something and should be the centre of some real smart signals on 2 and 1 mx. Good luck Bill, am anxious to hear it up.

Had a few tests from Reg with his phase modulator and he was able to hear it. He has got down to a balance where there is little difference between it and his former a.m. Of course certain adjustments of "tipping" and "padding" the nose, "it" doesn't use it that way.

Ray 3ZEM continues to get through the 25 miles to here 5 x 8 with a 616 final! If he has received contacts with 2 stations, he is working at the same frequency, it will really be worth hearing.

Eric 3ZAQ, a newcomer to the band, puts out quite a hefty signal on 2 mx, haven't found out about his gear yet. John 3ZBA is putting out a very small signal, he is using a 522 to 12 el. beam modulated 807s p.p. and for rx a 5GL converter into AR1. His outfit is very small, a very small means and other frequencies, mixing his own modulation at the same time.

It's possible you will have heard this fine outfit working as v.h.f. link to the Exhibition. At the time of writing the v.h.f. links are not working due to the weather, but I hope they will be in use before the first week is out, for although they are doing a very good job, it is necessary to use the links for 14 Mc. DX. The local noise level being terrific on all signals below about 87 to 88.

Haven't heard Ben 3EN lately, presume he is busy folding "vector diagrams". Don't let it get you down. En—325

## REPORTS OF LONG-DISTANCE

### T.V. RECEPTION REQUESTED

Norm Burton (T.V. DX fame) would be very pleased to receive reports of any long-distance t.v. reception in Australia, and offers to gather and correlate them over the I.G.Y. Information he requests is on reception at greater distances than 200 miles, and should state: Time, date, whether sound or vision signals (or both), details of station heard, frequency, etc.

Write to Norm Burton at 43 Beaconsfield Street, Revesby, N.S.W.

# DX ACTIVITY BY WK2QL†

## PROPAGATION

I do not like the principle of changing anything when doing a job as a relief. However, Hans used to gather a lot of information for a project he was on from our propagation reports and until he resumes these notes, unless you desire otherwise, I do not propose to continue the propagation report in the form he had. The prediction charts are available, and unless the DX fraternity find that there is a big variation at any particular period, no comment will be made on propagation.

But if you notice something outstanding, or off prediction in conjunction with the WWV/WWVB broadcasts, by all means let me have it for inclusion. For the W/Ve Contact there was quite a variation on 7 Mc. between the two week-ends. 3.5 Mc. was almost useless, which is understandable during a high m.u.f. season.

## NEWS AND NOTES

**VP5BH**, Cayman Is., was in operation for approx. a week-end and has now returned home.

**VP5BK** is on South Georgia (2ACX). **VP5BU** and **LU3ZM** are on the Orkneys (2ACX).

**SV0WD** is W4WUL and located in Crete (2ACX).

**SV0VO** is located in Rhodes (2ACX).

**VP2VG** was operating from the British section of the Virgin Is., but has now closed. At the present time he is not counted as a separate country by the A.R.R.L. The W.I.A. opinion is not known, but as we follow the A.R.R.L. in general principle, the same will probably apply here.

**YS10** states he has sent a QSL to all those promised, but I know many VKs who have not received a card. He has a good recording system and can tell the date of despatch, so if you are still waiting, drop him another card and one will be sent in return.

**EX-2TNG** is now **VS9AG** in Aden and looking for VK contacts with his old riggers (2AIR).

**JA** phones operating in the "cw" section of the 7 Mc. band are becoming quite a problem. They are strong from not long after dusk, and it is hard to get a clear spot for a DX c.w. QSO.

For those interested in YL QSOs, **KW6CM** will provide another country.

There seems to be increasing commercial activity on 21 Mc.

**LX1DC** is looking for VK contacts on 21 Mc.

The "fearful art of swishing the transmitter over the band has become very prevalent of late. Much of it can be traced to the Russian stations, but it happens when the band is not open to the U.S.S.R.

## QTHs of INTEREST

**VP5BH**—QSL via WAKVX.  
**HL2AC**—QSL via K.A.R.L., Seoul.  
**H18B**—QSL via Embassy, Cuidad, Trujillo.  
**YU5AB**—QSL via VU2AX.  
**CK1AA**—QSL via Box 58, Moscow.  
**VP5VG**—QSL via K4BDE.  
**VQ3FN**—Box 313, Natrobi (2AIR).  
**LN1AE**—Box 57, B.P.O. Tangier (BERS195).  
**DA1TY**—AFC21, Ypsilanti, Mich.  
**CNDX**—Rue Betty Weber 35, Esch/Alzitt (Rod De Balfour).  
**VS9AG**—Aden Airways, Aden (2AIR).

† Frank T. Hine, 30 Abbotsford Road, Homebush, N.S.W.  
‡ Call signs and prefixes worked.  
‡—zero time—G.M.T.

## ACTIVITIES

3.5 Mc.: 2GW: W\*, DUISV. 2QL: W\*, YU, JA, DU.

7 Mc.: 2AIR: VK8AD\* (Norfolk, 2 watts), OQ8RU, ZBICEP, SPIKAA, 2AMB: IICUV\*, ZIDRHX\*, OQ8RU\*, VK0AB\*, FK8AL, ZC3PM, DUISV. 2QL: ZELV\*, VK0AB\*, ZF4FM, ZE-2IG, ZS, UA3, YU, LUSVV, OA4PT, PY2BGM, HL2GP, JA: BERS195: DU1UP, JA, KLT, KP-AD5, OK1AL, UA3VB, Rod de Balfour, VE4RO, KH6JA; all a.m. Dave Jenkins, WIA-L369: W.

14 Mc. C.W.: 2ACK: SV0WD\*, VP5BK, VP5BU, VP2VG\*, VP5BH\*, 2AIR: ZLSAA\*, VQ-6Q\*, FASTI\*, 3V8AA\*, KW6CM, CK1AA, OZ\*, CO2SW\*, ZK2AB\*, HIBBE\*, VP5FL\*, CNLNB\*, VK0AB\*, JZ0PA\*, HL2AC\*, VP5BH\*, ZCSAL\*, CR1AA, 2AMB, VQ7CX\*, CX1BO\*, VR2B\*, VP5BH\*, OQ8RU\*, FSTRT\*, C60AC\*, VP2VG\*, CESUC\*, UR2AK\*, VK0AB\*, LZ-1WD\*, LUBAQ\*, ZS\*, OZ\*, ZC3RF, ZC3AL, CR5AH, 2QL: ULTKAA\*, ULTKBA\*, VP5BC\*, VP5BH\*, VP2VG\*, FSTRT\*, VK0AB\*, VQ2GR\*, OFPY\*, CO2SW\*, KW6CM, HIBBE\*, KC4US\*, HL2AC\*, YS10\*, UBAAG\*, UQ0AB\*, EAGA\*, UDDDD, UQ2KAA, UG6KAA, VU5AB, KG1AA, CK1AA, UGRAB, KC4USN, 2ARI: PY1PFR, W\*, JA, SRV, VP5BH\*, HIBBE\*, VQ7V\*, 2UR: VP2VG\*, ZS1LS\*, VR3B\*, KR6AQ\*, ZC-SRP\*, SRK: FK8AB\*, VE5KQ\*, HL2: UA0FR\*, UA0KFT\*, VE1: OAM\*, LU2D, ZB2CZ, VK0AB\*, VK0AB\*, BERS195: BV1US, CR, CR-9AH, CX1DZ, PB2Z, HA5BO, ISIAHK, ISRAM, JZ0PC, KM4K, OA4PT, OQ8RU, UH8KAA, ULTKAA, VK0AB, VQ2IE, XZ2OM, ZB1CZ, ZC3RF, ZS1AA, ZLSAA, WIA-L369: PY4AO, PY2CU, VP2VG, LUBAQ, UA3, UA0, and Rod de Balfour: SM, G, AP2RH, 45TNG.

14 Mc. A.M.: 2AMB: HIBBE\*, HIBBE\*, ZE-2CZ\*, DJ\*, OQ8FH\*, ZS\*, LASTE\*, ZLSAA\*, 2AAJA\*, VU5HA, YNICA\*, 2V8AA\*, ZC3AC\*, CN1AS, 2AB: KC0SP\*, HZ1AB\*, PJ2MC\*, LASYE\*, ZD6DT\*, ZK5AC\*, TIRMA\*, VP5BC\*, HIBBE\*, ZC3AL\*, CK1AA, VQ7CX\*, VQ7V\*, 2AK\*, SP7HX\*, DL1AB\*, M\*, KG4AA\*, 2WSP: ZD6DT\*, RADQ\*, CN8\*, HL2: COTOZ\*, Rod de Balfour: a large list of the pick-ups are N1B, SV0VO, UG6KAA, 4X1B, CD, 5BX, ZAIKUN, CN8MM, 3V8AS, SAIIT, SA-8XX, SAIIT, ETYUS, CR2SD, ZD1AW, FPAF, CR6AO, ZS, VQ2DA, VQ4DT, VQ4AB, HZ1TA, HZ1AB, HZ1KN, VS4JT, HL2AJ, PU-8AD, YNICA\*, YN1RA, VQ4AJ, HIRIE, HP-1FL, VP5BC, VP2VG, VP5BH, F4TVP, HIBBE\*, YS1MS, ZLSAA and on s.b. KC4USV, HZ1AB. The above would make many of the transmitting group very happy.

21 Mc. C.W.: 2AMB: VQ6LQ\* (1600), CN-8PJ\*, 4X4FG, ET2RH, Europe, 2QL: EA\*, ZC4IP\*, JZ, 3V8AA, JA, KHS, 2AIR: Western Europe, YU1DF, YU2UK, EASCR, KL7P1V\*, UA0KFG, HL2: UA0FR\*, 2V8AA\*, 2V8AB\*, 2V8AC\*, 2V8AD\*, 2V8AE\*, 2V8AF\*, 2V8AG\*, 2V8AH\*, 2V8AI\*, 2V8AJ\*, 2V8AK\*, 2V8AL\*, 2V8AM\*, 2V8AN\*, 2V8AO\*, 2V8AP\*, 2V8AQ\*, 2V8AR\*, 2V8AS\*, 2V8AT\*, 2V8AU\*, 2V8AV\*, 2V8AW\*, 2V8AX\*, 2V8AY\*, 2V8AZ\*, 2V8BA\*, 2V8BB\*, 2V8BC\*, 2V8BD\*, 2V8BE\*, 2V8BF\*, 2V8BG\*, 2V8BH\*, 2V8BI\*, 2V8BJ\*, 2V8BK\*, 2V8BL\*, 2V8BM\*, 2V8BN\*, 2V8BO\*, 2V8BP\*, 2V8BQ\*, 2V8BR\*, 2V8BS\*, 2V8BT\*, 2V8BU\*, 2V8BV\*, 2V8BW\*, 2V8BX\*, 2V8BY\*, 2V8BZ\*, 2V8CA\*, 2V8CB\*, 2V8CC\*, 2V8CD\*, 2V8CE\*, 2V8CF\*, 2V8CG\*, 2V8CH\*, 2V8CI\*, 2V8CJ\*, 2V8CK\*, 2V8CL\*, 2V8CM\*, 2V8CN\*, 2V8CO\*, 2V8CP\*, 2V8CQ\*, 2V8CR\*, 2V8CS\*, 2V8CT\*, 2V8CU\*, 2V8CV\*, 2V8CW\*, 2V8CX\*, 2V8CY\*, 2V8CZ\*, 2V8DA\*, 2V8DB\*, 2V8DC\*, 2V8DD\*, 2V8DE\*, 2V8DF\*, 2V8DG\*, 2V8DH\*, 2V8DI\*, 2V8DJ\*, 2V8DK\*, 2V8DL\*, 2V8DM\*, 2V8DN\*, 2V8DO\*, 2V8DP\*, 2V8DQ\*, 2V8DR\*, 2V8DS\*, 2V8DT\*, 2V8DU\*, 2V8DV\*, 2V8DW\*, 2V8DX\*, 2V8DY\*, 2V8DZ\*, 2V8EA\*, 2V8EB\*, 2V8EC\*, 2V8ED\*, 2V8EE\*, 2V8EF\*, 2V8EG\*, 2V8EH\*, 2V8EI\*, 2V8EJ\*, 2V8EK\*, 2V8EL\*, 2V8EM\*, 2V8EN\*, 2V8EO\*, 2V8EP\*, 2V8EQ\*, 2V8ER\*, 2V8ES\*, 2V8ET\*, 2V8EU\*, 2V8EV\*, 2V8EW\*, 2V8EX\*, 2V8EY\*, 2V8EZ\*, 2V8FA\*, 2V8FB\*, 2V8FC\*, 2V8FD\*, 2V8FE\*, 2V8FF\*, 2V8FG\*, 2V8FH\*, 2V8FI\*, 2V8FJ\*, 2V8FK\*, 2V8FL\*, 2V8FM\*, 2V8FN\*, 2V8FO\*, 2V8FP\*, 2V8FQ\*, 2V8FR\*, 2V8FS\*, 2V8FT\*, 2V8FU\*, 2V8FV\*, 2V8FW\*, 2V8FX\*, 2V8FY\*, 2V8FZ\*, 2V8GA\*, 2V8GB\*, 2V8GC\*, 2V8GD\*, 2V8GE\*, 2V8GF\*, 2V8GG\*, 2V8GH\*, 2V8GI\*, 2V8GJ\*, 2V8GK\*, 2V8GL\*, 2V8GM\*, 2V8GN\*, 2V8GO\*, 2V8GP\*, 2V8GQ\*, 2V8GR\*, 2V8GS\*, 2V8GT\*, 2V8GU\*, 2V8GV\*, 2V8GW\*, 2V8GX\*, 2V8GY\*, 2V8GZ\*, 2V8HA\*, 2V8HB\*, 2V8HC\*, 2V8HD\*, 2V8HE\*, 2V8HF\*, 2V8HG\*, 2V8HH\*, 2V8HI\*, 2V8HJ\*, 2V8HK\*, 2V8HL\*, 2V8HM\*, 2V8HN\*, 2V8HO\*, 2V8HP\*, 2V8HQ\*, 2V8HR\*, 2V8HS\*, 2V8HT\*, 2V8HU\*, 2V8HV\*, 2V8HW\*, 2V8HX\*, 2V8HY\*, 2V8HZ\*, 2V8IA\*, 2V8IB\*, 2V8IC\*, 2V8ID\*, 2V8IE\*, 2V8IF\*, 2V8IG\*, 2V8IH\*, 2V8IJ\*, 2V8IK\*, 2V8IL\*, 2V8IM\*, 2V8IN\*, 2V8IO\*, 2V8IP\*, 2V8IQ\*, 2V8IR\*, 2V8IS\*, 2V8IT\*, 2V8IU\*, 2V8IV\*, 2V8IW\*, 2V8IX\*, 2V8IY\*, 2V8IZ\*, 2V8JA\*, 2V8JB\*, 2V8JC\*, 2V8JD\*, 2V8JE\*, 2V8JF\*, 2V8JG\*, 2V8JH\*, 2V8JI\*, 2V8JJ\*, 2V8JK\*, 2V8JL\*, 2V8JM\*, 2V8JN\*, 2V8JO\*, 2V8JP\*, 2V8JQ\*, 2V8JR\*, 2V8JS\*, 2V8JT\*, 2V8JU\*, 2V8JV\*, 2V8JW\*, 2V8JX\*, 2V8JY\*, 2V8JZ\*, 2V8KA\*, 2V8KB\*, 2V8KC\*, 2V8KD\*, 2V8KE\*, 2V8KF\*, 2V8KG\*, 2V8KH\*, 2V8KI\*, 2V8KJ\*, 2V8KK\*, 2V8KL\*, 2V8KM\*, 2V8KN\*, 2V8KO\*, 2V8KP\*, 2V8KQ\*, 2V8KR\*, 2V8KS\*, 2V8KT\*, 2V8KU\*, 2V8KV\*, 2V8KW\*, 2V8KX\*, 2V8KY\*, 2V8KZ\*, 2V8LA\*, 2V8LB\*, 2V8LC\*, 2V8LD\*, 2V8LE\*, 2V8LF\*, 2V8LG\*, 2V8LH\*, 2V8LI\*, 2V8LJ\*, 2V8LK\*, 2V8LL\*, 2V8LM\*, 2V8LN\*, 2V8LO\*, 2V8LP\*, 2V8LQ\*, 2V8LR\*, 2V8LS\*, 2V8LT\*, 2V8LU\*, 2V8LV\*, 2V8LW\*, 2V8LX\*, 2V8LY\*, 2V8LZ\*, 2V8MA\*, 2V8MB\*, 2V8MC\*, 2V8MD\*, 2V8ME\*, 2V8MF\*, 2V8MG\*, 2V8MH\*, 2V8MI\*, 2V8MJ\*, 2V8MK\*, 2V8ML\*, 2V8MN\*, 2V8MO\*, 2V8MP\*, 2V8MQ\*, 2V8MR\*, 2V8MS\*, 2V8MT\*, 2V8MU\*, 2V8MV\*, 2V8MW\*, 2V8MX\*, 2V8MY\*, 2V8MZ\*, 2V8NA\*, 2V8NB\*, 2V8NC\*, 2V8ND\*, 2V8NE\*, 2V8NF\*, 2V8NG\*, 2V8NH\*, 2V8NI\*, 2V8NJ\*, 2V8NK\*, 2V8NL\*, 2V8NM\*, 2V8NO\*, 2V8NP\*, 2V8NQ\*, 2V8NR\*, 2V8NS\*, 2V8NT\*, 2V8NU\*, 2V8NV\*, 2V8NW\*, 2V8NX\*, 2V8NY\*, 2V8NZ\*, 2V8OA\*, 2V8OB\*, 2V8OC\*, 2V8OD\*, 2V8OE\*, 2V8OF\*, 2V8OG\*, 2V8OH\*, 2V8OI\*, 2V8OJ\*, 2V8OK\*, 2V8OL\*, 2V8OM\*, 2V8ON\*, 2V8OO\*, 2V8OP\*, 2V8OQ\*, 2V8OR\*, 2V8OS\*, 2V8OT\*, 2V8OU\*, 2V8OV\*, 2V8OW\*, 2V8OX\*, 2V8OY\*, 2V8OZ\*, 2V8PA\*, 2V8PB\*, 2V8PC\*, 2V8PD\*, 2V8PE\*, 2V8PF\*, 2V8PG\*, 2V8PH\*, 2V8PI\*, 2V8PJ\*, 2V8PK\*, 2V8PL\*, 2V8PM\*, 2V8PN\*, 2V8PO\*, 2V8PP\*, 2V8PQ\*, 2V8PR\*, 2V8PS\*, 2V8PT\*, 2V8PU\*, 2V8PV\*, 2V8PW\*, 2V8PX\*, 2V8PY\*, 2V8PZ\*, 2V8QA\*, 2V8QB\*, 2V8QC\*, 2V8QD\*, 2V8QE\*, 2V8QF\*, 2V8QG\*, 2V8QH\*, 2V8QI\*, 2V8QJ\*, 2V8QK\*, 2V8QL\*, 2V8QM\*, 2V8QN\*, 2V8QO\*, 2V8QP\*, 2V8QQ\*, 2V8QR\*, 2V8QS\*, 2V8QT\*, 2V8QU\*, 2V8QV\*, 2V8QW\*, 2V8QX\*, 2V8QY\*, 2V8QZ\*, 2V8RA\*, 2V8RB\*, 2V8RC\*, 2V8RD\*, 2V8RE\*, 2V8RF\*, 2V8RG\*, 2V8RH\*, 2V8RI\*, 2V8RJ\*, 2V8RK\*, 2V8RL\*, 2V8RM\*, 2V8RN\*, 2V8RO\*, 2V8RP\*, 2V8RQ\*, 2V8RR\*, 2V8RS\*, 2V8RT\*, 2V8RU\*, 2V8RV\*, 2V8RW\*, 2V8RX\*, 2V8RY\*, 2V8RZ\*, 2V8SA\*, 2V8SB\*, 2V8SC\*, 2V8SD\*, 2V8SE\*, 2V8SF\*, 2V8SG\*, 2V8SH\*, 2V8SI\*, 2V8SJ\*, 2V8SK\*, 2V8SL\*, 2V8SM\*, 2V8SN\*, 2V8SO\*, 2V8SP\*, 2V8SQ\*, 2V8SR\*, 2V8SS\*, 2V8ST\*, 2V8SU\*, 2V8SV\*, 2V8SW\*, 2V8SX\*, 2V8SY\*, 2V8SZ\*, 2V8TA\*, 2V8TB\*, 2V8TC\*, 2V8TD\*, 2V8TE\*, 2V8TF\*, 2V8TG\*, 2V8TH\*, 2V8TI\*, 2V8TJ\*, 2V8TK\*, 2V8TL\*, 2V8TM\*, 2V8TN\*, 2V8TO\*, 2V8TP\*, 2V8TQ\*, 2V8TR\*, 2V8TS\*, 2V8TT\*, 2V8TU\*, 2V8TV\*, 2V8TW\*, 2V8TX\*, 2V8TY\*, 2V8TZ\*, 2V8UA\*, 2V8UB\*, 2V8UC\*, 2V8UD\*, 2V8UE\*, 2V8UF\*, 2V8UG\*, 2V8UH\*, 2V8UI\*, 2V8UJ\*, 2V8UK\*, 2V8UL\*, 2V8UM\*, 2V8UN\*, 2V8UO\*, 2V8UP\*, 2V8UQ\*, 2V8UR\*, 2V8US\*, 2V8UT\*, 2V8UU\*, 2V8UV\*, 2V8UW\*, 2V8UX\*, 2V8UY\*, 2V8UZ\*, 2V8VA\*, 2V8VB\*, 2V8VC\*, 2V8VD\*, 2V8VE\*, 2V8VF\*, 2V8VG\*, 2V8VH\*, 2V8VI\*, 2V8VJ\*, 2V8VK\*, 2V8VL\*, 2V8VM\*, 2V8VN\*, 2V8VO\*, 2V8VP\*, 2V8VQ\*, 2V8VR\*, 2V8VS\*, 2V8VT\*, 2V8VU\*, 2V8VV\*, 2V8VW\*, 2V8VX\*, 2V8VY\*, 2V8VZ\*, 2V8WA\*, 2V8WB\*, 2V8WC\*, 2V8WD\*, 2V8WE\*, 2V8WF\*, 2V8WG\*, 2V8WH\*, 2V8WI\*, 2V8WJ\*, 2V8WK\*, 2V8WL\*, 2V8WM\*, 2V8WN\*, 2V8WO\*, 2V8WP\*, 2V8WQ\*, 2V8WR\*, 2V8WS\*, 2V8WT\*, 2V8WU\*, 2V8WV\*, 2V8WW\*, 2V8WX\*, 2V8WY\*, 2V8WZ\*, 2V8XA\*, 2V8XB\*, 2V8XC\*, 2V8XD\*, 2V8XE\*, 2V8XF\*, 2V8XG\*, 2V8XH\*, 2V8XI\*, 2V8XJ\*, 2V8XK\*, 2V8XL\*, 2V8XM\*, 2V8XN\*, 2V8XO\*, 2V8XP\*, 2V8XQ\*, 2V8XR\*, 2V8XS\*, 2V8XT\*, 2V8XU\*, 2V8XV\*, 2V8XW\*, 2V8XX\*, 2V8XY\*, 2V8XZ\*, 2V8YA\*, 2V8YB\*, 2V8YC\*, 2V8YD\*, 2V8YE\*, 2V8YF\*, 2V8YG\*, 2V8YH\*, 2V8YI\*, 2V8YJ\*, 2V8YK\*, 2V8YL\*, 2V8YM\*, 2V8YN\*, 2V8YO\*, 2V8YP\*, 2V8YQ\*, 2V8YR\*, 2V8YS\*, 2V8YT\*, 2V8YU\*, 2V8YV\*, 2V8YW\*, 2V8YX\*, 2V8YY\*, 2V8YZ\*, 2V8ZA\*, 2V8ZB\*, 2V8ZC\*, 2V8ZD\*, 2V8ZE\*, 2V8ZF\*, 2V8ZG\*, 2V8ZH\*, 2V8ZI\*, 2V8ZJ\*, 2V8ZK\*, 2V8ZL\*, 2V8ZM\*, 2V8ZN\*, 2V8ZO\*, 2V8ZP\*, 2V8ZQ\*, 2V8ZR\*, 2V8ZS\*, 2V8ZT\*, 2V8ZU\*, 2V8ZV\*, 2V8ZW\*, 2V8ZX\*, 2V8ZY\*, 2V8ZZ\*, 2V8AA\*, 2V8AB\*, 2V8AC\*, 2V8AD\*, 2V8AE\*, 2V8AF\*, 2V8AG\*, 2V8AH\*, 2V8AI\*, 2V8AJ\*, 2V8AK\*, 2V8AL\*, 2V8AM\*, 2V8AN\*, 2V8AO\*, 2V8AP\*, 2V8AQ\*, 2V8AR\*, 2V8AS\*, 2V8AT\*, 2V8AU\*, 2V8AV\*, 2V8AW\*, 2V8AX\*, 2V8AY\*, 2V8AZ\*, 2V8BA\*, 2V8BB\*, 2V8BC\*, 2V8BD\*, 2V8BE\*, 2V8BF\*, 2V8BG\*, 2V8BH\*, 2V8BI\*, 2V8BJ\*, 2V8BK\*, 2V8BL\*, 2V8BM\*, 2V8BN\*, 2V8BO\*, 2V8BP\*, 2V8BQ\*, 2V8BR\*, 2V8BS\*, 2V8BT\*, 2V8BU\*, 2V8BV\*, 2V8BW\*, 2V8BX\*, 2V8BY\*, 2V8BZ\*, 2V8CA\*, 2V8CB\*, 2V8CC\*, 2V8CD\*, 2V8CE\*, 2V8CF\*, 2V8CG\*, 2V8CH\*, 2V8CI\*, 2V8CJ\*, 2V8CK\*, 2V8CL\*, 2V8CM\*, 2V8CN\*, 2V8CO\*, 2V8CP\*, 2V8CQ\*, 2V8CR\*, 2V8CS\*, 2V8CT\*, 2V8CU\*, 2V8CV\*, 2V8CW\*, 2V8CX\*, 2V8CY\*, 2V8CZ\*, 2V8DA\*, 2V8DB\*, 2V8DC\*, 2V8DD\*, 2V8DE\*, 2V8DF\*, 2V8DG\*, 2V8DH\*, 2V8DI\*, 2V8DJ\*, 2V8DK\*, 2V8DL\*, 2V8DM\*, 2V8DN\*, 2V8DO\*, 2V8DP\*, 2V8DQ\*, 2V8DR\*, 2V8DS\*, 2V8DT\*, 2V8DU\*, 2V8DV\*, 2V8DW\*, 2V8DX\*, 2V8DY\*, 2V8DZ\*, 2V8EA\*, 2V8EB\*, 2V8EC\*, 2V8ED\*, 2V8EE\*, 2V8EF\*, 2V8EG\*, 2V8EH\*, 2V8EI\*, 2V8EJ\*, 2V8EK\*, 2V8EL\*, 2V8EM\*, 2V8EN\*, 2V8EO\*, 2V8EP\*, 2V8EQ\*, 2V8ER\*, 2V8ES\*, 2V8ET\*, 2V8EU\*, 2V8EV\*, 2V8EW\*, 2V8EX\*, 2V8EY\*, 2V8EZ\*, 2V8FA\*, 2V8FB\*, 2V8FC\*, 2V8FD\*, 2V8FE\*, 2V8FF\*, 2V8FG\*, 2V8FH\*, 2V8FI\*, 2V8FJ\*, 2V8FK\*, 2V8FL\*, 2V8FM\*, 2V8FN\*, 2V8FO\*, 2V8FP\*, 2V8FQ\*, 2V8FR\*, 2V8FS\*, 2V8FT\*, 2V8FU\*, 2V8FV\*, 2V8FW\*, 2V8FX\*, 2V8FY\*, 2V8FZ\*, 2V8GA\*, 2V8GB\*, 2V8GC\*, 2V8GD\*, 2V8GE\*, 2V8GF\*, 2V8GG\*, 2V8GH\*, 2V8GI\*, 2V8GJ\*, 2V8GK\*, 2V8GL\*, 2V8GM\*, 2V8GN\*, 2V8GO\*, 2V8GP\*, 2V8GQ\*, 2V8GR\*, 2V8GS\*, 2V8GT\*, 2V8GU\*, 2V8GV\*, 2V8GW\*, 2V8GX\*, 2V8GY\*, 2V8GZ\*, 2V8HA\*, 2V8HB\*, 2V8HC\*, 2V8HD\*, 2V8HE\*, 2V8HF\*, 2V8HG\*, 2V8HH\*, 2V8HI\*, 2V8HJ\*, 2V8HK\*, 2V8HL\*, 2V8HM\*, 2V8HN\*, 2V8HO\*, 2V8HP\*, 2V8HQ\*, 2V8HR\*, 2V8HS\*, 2V8HT\*, 2V8HU\*, 2V8HV\*, 2V8HW\*, 2V8HX\*, 2V8HY\*, 2V8HZ\*, 2V8IA\*, 2V8IB\*, 2V8IC\*, 2V8ID\*, 2V8IE\*, 2V8IF\*, 2V8IG\*, 2V8IH\*, 2V8IJ\*, 2V8IK\*, 2V8IL\*, 2V8IM\*, 2V8IN\*, 2V8IO\*, 2V8IP\*, 2V8IQ\*, 2V8IR\*, 2V8IS\*, 2V8IT\*, 2V8IU\*, 2V8IV\*, 2V8IW\*, 2V8IX\*, 2V8IY\*, 2V8IZ\*, 2V8JA\*, 2V8JB\*, 2V8JC\*, 2V8JD\*, 2V8JE\*, 2V8JF\*, 2V8JG\*, 2V8JH\*, 2V8JI\*, 2V8JJ\*, 2V8JK\*, 2V8JL\*, 2V8JM\*, 2V8JN\*, 2V8JO\*, 2V8JP\*, 2V8JQ\*, 2V8JR\*, 2V8JS\*, 2V8JT\*, 2V8JU\*, 2V8JV\*, 2V8JW\*, 2V8JX\*, 2V8JY\*, 2V8JZ\*, 2V8KA\*, 2V8KB\*, 2V8KC\*, 2V8KD\*, 2V8KE\*, 2V8KF\*, 2V8KG\*, 2V8KH\*, 2V8KI\*, 2V8KJ\*, 2V8KL\*, 2V8KM\*, 2V8KN\*, 2V8KO\*, 2V8KP\*, 2V8KQ\*, 2V8KR\*, 2V8KS\*, 2V8KT\*, 2V8KU\*, 2V8KV\*, 2V8KW\*, 2V8KX\*, 2V8KY\*, 2V8KZ\*, 2V8LA\*, 2V8LB\*, 2V8LC\*, 2V8LD\*, 2V8LE\*, 2V8LF\*, 2V8LG\*, 2V8LH\*, 2V8LI\*, 2V8LJ\*, 2V8LK\*, 2V8LL\*, 2V8LM\*, 2V8LN\*, 2V8LO\*, 2V8LP\*, 2V8LQ\*, 2V8LR\*, 2V8LS\*, 2V8LT\*, 2V8LU\*, 2V8LV\*, 2V8LW\*, 2V8LX\*, 2V8LY\*, 2V8LZ\*, 2V8MA\*, 2V8MB\*, 2V8MC\*, 2V8MD\*, 2V8ME\*, 2V8MF\*, 2V8MG\*, 2V8MH\*, 2V8MI\*, 2V8MJ\*, 2V8MK\*, 2V8ML\*, 2V8MN\*, 2V8MO\*, 2V8MP\*, 2V8MQ\*, 2V8MR\*, 2V8MS\*, 2V8MT\*, 2V8MU\*, 2V8MV\*, 2V8MW\*, 2V8MX\*, 2V8MY\*, 2V8MZ\*, 2V8NA\*, 2V8NB\*, 2V8NC\*, 2V8ND\*, 2V8NE\*, 2V8NF\*, 2V8NG\*, 2V8NH\*, 2V8NI\*, 2V8NJ\*, 2V8NK\*, 2V8NL\*, 2V8NM\*, 2V8NO\*, 2V8NP\*, 2V8NQ\*, 2V8NR\*, 2V8NS\*, 2V8NT\*, 2V8NU\*, 2V8NV\*, 2V8NW\*, 2V8NX\*, 2V8NY\*, 2V8NZ\*, 2V8OA\*, 2V8OB\*, 2V8OC\*, 2V8OD\*, 2V8OE\*, 2V8OF\*, 2V8OG\*, 2V8OH\*, 2V8OI\*, 2V8OJ\*, 2V8OK\*, 2V8OL\*, 2V8OM\*, 2V8ON\*, 2V8OO\*, 2V8OP\*, 2V8OQ\*, 2V8OR\*, 2V8OS\*, 2V8OT\*, 2V8OU\*, 2V8OV\*, 2V8OW\*, 2V8OX\*, 2V8OY\*, 2V8OZ\*, 2V8PA\*, 2V8PB\*, 2V8PC\*, 2V8PD\*, 2V8PE\*, 2V8PF\*, 2V8PG\*, 2V8PH\*, 2V8PI\*, 2V8PJ\*, 2V8PK\*, 2V8PL\*, 2V8PM\*, 2V8PN\*, 2V8PO\*, 2V8PP\*, 2V8PQ\*, 2V8PR\*, 2V8PS\*, 2V8PT\*, 2V8PU\*, 2V8PV\*, 2V8PW\*, 2V8PX\*, 2V8PY\*, 2V8PZ\*, 2V8QA\*, 2V8QB\*, 2V8QC\*, 2V8QD\*, 2V8QE\*, 2V8QF\*, 2V8QG\*, 2V8QH\*, 2V8QI\*, 2V8QJ\*, 2V8QK\*, 2V8QL\*, 2V8QM\*, 2V8QN\*, 2V8QO\*, 2V8QP\*, 2V8QQ\*, 2V8QR\*, 2V8QS\*, 2V8QT\*, 2V8QU\*, 2V8QV\*, 2V8QW\*, 2V8QX\*, 2V8QY\*, 2V8QZ\*, 2V8RA\*, 2V8RB\*, 2V8RC\*, 2V8RD\*, 2V8RE\*, 2V8RF\*, 2V8RG\*, 2V8RH\*, 2V8RI\*, 2V8RJ\*, 2V8RK\*, 2V8RL\*, 2V8RM\*, 2V8RN\*, 2V8RO\*, 2V8RP\*, 2V8RQ\*, 2V8RR\*, 2V8RS\*, 2V8RT\*, 2V8RU\*, 2V8RV\*, 2V8RW\*, 2V8RX\*, 2V8RY\*, 2V8RZ\*, 2V8SA\*, 2V8SB\*, 2V8SC\*, 2V8SD\*, 2V8SE\*, 2V8SF\*, 2V8SG\*, 2V8SH\*, 2V8SI\*, 2V8SJ\*, 2V8SK\*, 2V8SL\*, 2V8SM\*, 2V8SN\*, 2V8SO\*, 2V8SP\*, 2V8SQ\*, 2V8SR\*, 2V8SS\*, 2V8ST\*, 2V8SU\*, 2V8SV\*, 2V8SW\*, 2V8SX\*, 2V8SY\*, 2V8SZ\*, 2V8TA\*, 2V8TB\*, 2V8TC\*, 2V8TD\*, 2V8TE\*, 2V8TF\*, 2V8TG\*, 2V8TH\*, 2V8TI\*, 2V8TJ\*, 2V8TK\*, 2V8TL\*, 2V8TM\*, 2V8TN\*, 2V8TO\*, 2V8TP\*, 2V8TQ\*, 2V8TR\*, 2V8TS\*, 2V8TT\*, 2V8TU\*, 2V8TV\*, 2V8TW\*, 2V8TX\*, 2V8TY\*, 2V8TZ\*, 2V8UA\*, 2V8UB\*, 2V8UC\*, 2V8UD\*, 2V8UE\*, 2V8UF\*, 2V8UG\*, 2V8UH\*, 2V8UI\*, 2V8UJ\*, 2V8UK\*, 2V8UL\*, 2V8UM\*, 2V8UN\*, 2V8UO\*, 2V8UP\*, 2V8UQ\*, 2V8UR\*, 2V8US\*, 2V8UT\*, 2V8UU\*, 2V8UV\*, 2V8UW\*, 2V8UX\*, 2V8UY\*, 2V8UZ\*, 2V8VA\*, 2V8VB\*, 2V8VC\*, 2V8VD\*, 2V8VE\*, 2V8VF\*, 2V8VG\*, 2V8VH\*, 2V8VI\*, 2V8VJ\*, 2V8VK\*, 2V8VL\*, 2V8VM\*, 2V8VN\*, 2V8VO\*, 2V8VP\*, 2V8VQ\*, 2V8VR\*, 2V8VS\*, 2V8VT\*, 2V8VU\*, 2V8VV\*, 2V8VW\*, 2V8VX\*, 2V8VY\*, 2V8VZ\*, 2V8WA\*, 2V8WB\*, 2V8WC\*, 2V8WD\*, 2V8WE\*, 2V8WF\*, 2V8WG\*, 2V8WH\*, 2V8WI\*, 2V8WJ\*, 2V8WK\*, 2V8WL\*, 2V8WM\*, 2V8WN\*, 2V8WO\*, 2V8WP\*, 2V8WQ\*, 2V8WR\*, 2V8WS\*, 2V8WT\*, 2V8WU\*, 2V8WV\*, 2V8WW\*, 2V8WX\*, 2V8WY\*, 2V8WZ\*, 2V8XA\*, 2V8XB\*, 2V8XC\*, 2V8XD\*, 2V8XE\*, 2V8XF\*, 2V8XG\*, 2V8XH\*, 2V8XI\*, 2V8XJ\*, 2V8XK\*, 2V8XL\*, 2V8XM\*, 2V8XN\*, 2V8XO\*, 2V8XP\*, 2V8XQ\*, 2V8XR\*, 2V8XS\*, 2V8XT\*, 2V8XU\*, 2V8XV\*, 2V8XW\*, 2V8XX\*, 2V8XY\*, 2V8XZ\*, 2V8YA\*, 2V8YB\*, 2V8YC\*, 2V8YD\*, 2V8YE\*, 2V8YF\*, 2V8YG\*, 2V8YH\*, 2V8YI\*, 2V8YJ\*, 2V8YK\*, 2V8YL\*, 2V8YM\*, 2V8YN\*, 2V8YO\*, 2V8YP\*, 2V8YQ\*, 2V8YR\*, 2V8YS\*, 2V8YT\*, 2V8YU\*, 2V8YV\*, 2V8YW\*, 2V8YX\*, 2V8YY\*, 2V8YZ\*, 2V8ZA\*, 2V8ZB\*, 2V8ZC\*, 2V8ZD\*, 2V8ZE\*, 2V8ZF\*, 2V8ZG\*, 2V8ZH\*, 2V8ZI\*, 2V8ZJ\*, 2V8ZK\*, 2V8ZL\*, 2V8ZM\*, 2V8ZN\*, 2V8ZO\*, 2V8ZP\*, 2V8ZQ\*, 2V8ZR\*, 2V8ZS\*, 2V8ZT\*, 2V8ZU\*, 2V8ZV\*, 2V8ZW\*, 2V8ZX\*, 2V8ZY\*, 2V8ZZ\*, 2V8AA\*, 2V8AB\*, 2V8AC\*, 2V8AD\*, 2V8AE\*, 2V8AF\*, 2V8AG\*, 2V8AH\*, 2V8AI\*, 2V8AJ\*, 2V8AK\*, 2V8AL\*, 2V8AM\*, 2V8AN\*, 2V8AO\*, 2V8AP\*, 2V8AQ\*, 2V8AR\*, 2V8AS\*, 2V8AT\*, 2V8AU\*, 2V8AV\*, 2V8AW\*, 2V8AX\*, 2V8AY\*, 2V8AZ\*, 2V8BA\*, 2V8BB\*, 2V8BC\*, 2V8BD\*, 2V8BE\*, 2V8BF\*, 2V8BG\*, 2V8BH\*, 2V8BI\*, 2V8BJ\*, 2V8BK\*, 2V8BL\*, 2V8BM\*, 2V8BN\*, 2V8BO\*, 2V8BP\*, 2V8BQ\*, 2V8BR\*, 2V8BS\*, 2V8BT\*, 2V8BU\*, 2V8BV\*, 2V8BW\*, 2V8BX\*, 2V8BY\*, 2V8BZ\*, 2V8CA\*, 2V8CB\*, 2V8CC\*, 2V8CD\*, 2V8CE\*, 2V8CF\*, 2V8CG\*, 2V8CH\*, 2V8CI\*, 2V8CJ\*, 2V8CK\*, 2V8CL\*, 2V8CM\*, 2V8CN\*, 2V8CO\*, 2V8CP\*, 2V8CQ\*, 2V8CR\*, 2V8CS\*, 2V8CT\*, 2V8CU\*, 2V8CV\*, 2V8CW\*, 2V8CX\*, 2V8CY\*, 2V8CZ\*, 2V8DA\*, 2V8DB\*, 2V8DC\*, 2V8DD\*, 2V8DE\*, 2V8DF\*, 2V8DG\*, 2V8DH\*, 2V8DI\*, 2V8DJ\*, 2V8DK\*, 2V8DL\*, 2V8DM\*, 2V8DN\*, 2V8DO\*, 2V8DP\*, 2V8DQ\*, 2V8DR\*, 2V8DS\*, 2V8DT\*, 2V8DU\*, 2V8DV\*, 2V8DW\*, 2V8DX\*, 2V8DY\*, 2V8DZ\*, 2V8EA\*, 2V8EB\*, 2V8EC\*, 2V8ED\*, 2V8EE\*, 2V8EF\*, 2V8EG\*, 2V8EH\*, 2V8EI\*, 2V8EJ\*, 2V8EK\*, 2V8EL\*, 2V8EM\*, 2V8EN\*, 2V8EO\*, 2V8EP\*, 2V8EQ\*, 2V8ER\*, 2V8ES\*, 2V8ET\*, 2V8EU\*, 2V8EV\*, 2V8EW\*, 2V8EX\*, 2V8EY\*, 2V8EZ\*, 2V8FA\*, 2V8FB\*, 2V8FC\*, 2V8FD\*, 2V8FE\*, 2V8FF\*, 2V8FG\*, 2V8FH\*, 2V8FI\*, 2V8FJ\*, 2V8FK\*, 2V8FL\*, 2V8FM\*, 2V8FN\*, 2V8FO\*, 2V8FP\*, 2V8FQ\*, 2V8FR\*, 2V8FS\*, 2V8FT\*, 2V8FU\*, 2V8FV\*, 2V8FW\*, 2V8FX\*, 2V8FY\*, 2V8FZ\*, 2V8GA\*, 2V8GB

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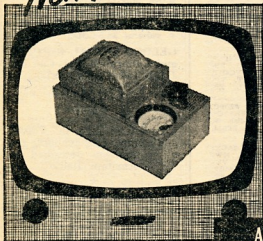
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# FEDERAL, QSL, and VISUAL NOTES

## FEDERAL

### CONFERENCES, 1956

The only official I.T.U. conference devoted to radio in 1956 was that of the C.C.I.R. at Warsaw; primarily a technical study group working on special assignments, it has no authority in allocations matters. The Administrative Council of I.T.U. after a poll of the members, has decided that the next Plenipotentiary Conference and Administrative Radio Conference should be held in 1959. Details have not yet been settled and the decision is still subject to review at the 12th session of the Council, to be held in April, 1957. However, it is reasonably certain that the conference will take place in the Fall of 1959, at Geneva.

The Second Triennial Conference of I.A.R.U. members in Region I, was held in Stresa, Italy, on June 12-16. H. Laeti, HB9GA, was chosen as chairman of the Executive Committee for the next three years. With Arthur Milne, G6MI, continuing as Secretary and James Simonnet, F6DW, elected as Treasurer.

## DX ACTIVITY REPORT FROM I.A.R.U.

DX conditions were the best in years, resulting in tremendous activity in the Amateur bands. W.A.C. issuances reached 1989 during 1956, the highest ever recorded in one year, and almost double the 1955 total of 744. Of these, 643 were for phone. There were nine endorsements for working all continents on 10 m, and 23 endorsements for two-way a.s.b. W.A.C.

## I.A.R.U. TELLS OF GAMES RELAY

The handing of Olympic Games Relay—the I.A.R.U. has outlined the story of the successful project of the VK7 Division. The report is as follows:

"The Tasmanian Division of the Wireless Institute of Australia and the Attika Amateur Radio Club of Athens, Greece, arranged for the relaying of a message of friendship and greeting on the occasion of the Sixteenth Olympic Games, to be held in 1956, at Melbourne. The message was relayed by the club, originated by SV15V near the site of the ancient games to VK7VH near Mount Olympus, Tasmania, and forwarded to Attika. Commence Melbourne. Amateurs in many other countries assisted, with the special approval of their governments, by keeping the frequency clear and by providing bills of missing words in the text. A return message also was successful. The whole show went off quite smoothly to the great satisfaction of the participants, and demonstrated the fine spirit of co-operation among members of our fraternity."

## R.S.G.B. LUNCHEON CLUB

In another part of the magazine will be found details of the time and place of meetings of the very popular R.S.G.B. London Members' Luncheon Club. The Hon. Secretary, Mr. Frank Fletcher, G6FUX, has again written to the Federal Executive offering to members a cordial invitation to be present at these gatherings when they are in London. Executive members are invited to bring a guest, and hopes that when members are travelling abroad they will avail themselves of same. Frank reports that of the 29 visitors to the club last year, several were from VK. So far they have feasted 17 different countries and hope to feast their DX C.C.

## FEDERAL QSL BUREAU

Another one of the certificate hunters. Worked Liverpool Award (W.L.A.) This award is sponsored by the Liverpool and District Amateur Radio Society and consists of four parts or grades, c.w., phone or a combination of both may be used and a minimum signal strength of 3 and tone of 8 is required. All claims must be accompanied by a receipt, December, 1955. The grade applicable to Australia is Grade 1 and requires proof of contact with five (5) different Liverpool stations. Any card may be used. Applications, together with the five QSL cards and six international reply coupons, must be sent to G3BHT, "Hove To," Hove, Sussex, for nearest post office. A short wave listener award will also be issued with rules similar to above.

KP4AIO, Rules, who will be better remembered as VP8BM for four years, advises that any VK who missed out on a VP8BM card

may have same by writing him at Box 130, Ramey A.F.B., Puerto Rico.

Joe W0EFK is now W0EFK/KL7 on Shemya Island in the Aleutian chain, and expects to see there some time while Don W0KLD is now W0KLD/KL7 on the arctic coast of Alaska. Dennis V0NNE said he was on the Hawaiian Islands, Honolulu, near the Plymouth. Tom K0INI is ex-T1TGT. (Thanks Austine.)

Melbourne Hams were pleased to meet W2MMH (Alan) and W0HHL (John), both of whom the U.S. Delegation had met with the three other destroyers visited Melbourne at the end of March to early April. Both visitors attended the annual meeting of the Victorian Division and were interested in the conduct of business and the wide range of subjects listed for discussion.

In a long letter to writer from Davis, Westfold Hills, Princess Elizabeth Land, under date of 13th February, Chas VK0AB (ex-VK1AC, VK3AKI and VK3IB) gives much interesting details of the set-up down south. Says the personnel consists of only five men, mainly for meteorological work, but also undertaking a certain amount of auroral, exploratory and geological studies. The purpose is to provide another link in the chain of stations furnishing data during the I.G.Y. They are situated 400 miles east of Mirny and 370 miles west of the Russian station. The locale is a desolate area of rocky hills about 30 miles by 15 in extent. At either end the coastline ends abruptly in icefields of the continental ice shelf. Chas mentions that the view seaward is a magnificent scene of glistering bergs of all shapes and sizes, and states that the total absence of any form of life or even the lowly forms of vegetation makes Macquarie Island a paradise by comparison. The antenna erected is a horizontal one with 100 ft. span and an angle of 40 degrees. It averages 50 ft. in height and is directed on Perth Radio. As it is unattended its major back lobe is towards the U.S. and Russia, thus killing two birds with one stone. It is of course cut for the commercial frequencies used, but exhibits good radiation properties on the Amateur channels.

At date of writing Chas. could only operate on Ham bands for a few hours each evening on 14400 kc which makes it rather tedious to contact him. Chas. runs the 4 Mc. band on long path to U.S. and the W QRM is terrific. Chas. is using a Collins AKT13 automatic transmitter running 10 watts. When pressure of work eases and the long Antarctic nights set in Chas. will appear at times more convenient to VK. He still uses the old Hallcraft 5328 receiver which has given him good service over many years. He is unable to hear any signals below 5 Mc., but expects to be able to use 80 mc during the winter. He plans activity on 80-40-20-15 mc bands, but has nothing which will operate on 28 Mc. Soon after settling in there was a radio blackout—nothing heard over the entire spectrum for three days, a few weak signals only on the fourth day and a scratchy contact with Mawson on the fifth day. Chas. made a contact with VK1GA at Mawson on 5th February and claims the honour of the 1st Antarctic VK0 to work the last Antarctic VK1!

As advised earlier, Bill VK6ZG will be handling QSL activity for Chas. He will be sent on a receipt but bill and will go to Bureaux unless accompanied by I.R.C. C.W. will be the main means of contact but Chas. will use phone if required.

Dave Davies, CN2AE (ex-EKIDS and GW-3AN) advises he has worked quite a few VK stations, mainly VK4s, but up to time of writing had not received any cards. As he is QSL minded, would appreciate a response. QTH is Box 57, B.P.O., Tangier.

—Ray Jones, VK3RJ, Manager.

## CHANGE OF ADDRESS

W.I.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."

## NEW SOUTH WALES

### HUNTER BRANCH

The Annual General Meeting of the Hunter Branch was held on 8th March at the University of Technology, Tighes Hill, with 13 present in attendance. The Secretary, Charlie ZARV, read the annual report in which our lecturers for the year were shown as 2ANU 2KG, 2VU, 2CS, 2ADS, 2MC, 2FX, 2AFX, J. McKinnon and J. Spencer.

The Social Secretary's report was given by Gordon Sutherland and Bill ZTD delivered the President's report. It was announced that the I.R.E. had been invited to give a lunch member interested to a lecture on "Thermionic Control" on the following Friday night.

Ron Bishop, a visitor to the district, gave a talk on his experiences while operating his Ham station in Ghana.

State President, Jim Corbin, addressed the meeting and then took the chair to conduct the election of officers of the Hunter Branch for the ensuing 12 months. The results of the election were as follows: Branch President, Lionel 2CS; Vice-President, Stewart Fairburn; Secretary, Charles 2ZD; Treasurer, Bill 2XT; Social Secretary, Gordon Sutherland; Ham Treasurer, Bob Bailey, and Zone Correspondent, Les 2AOR.

During the month quite a few of the boys have been active and one of our 2200 m.v.l., fell silent. Ken 2KG has been holidaying at Port Stephens and has been sending a lot of 40 mc work from his "Biscuit tin" to John 2XQ doing well on 15 mc as well as with the "old gentlemen on 80 mc." He has also acquired another transmitter rx from W and Local 15 mc champ, is Jim 2ART. Jim finds Europeans come back by the dozen around 2100 GMT. He hopes to be on 10 mc soon, but gets his beams up on 20, 15 and 10 mc. With 10 mc opening up that "twizard of ten," our old pal Ernie 2FP, is all set to go. Harold 2AFA has been working on 2AS's gear and has been having a lot of fun and success chasing W.A.S. on 20 mc c.w. with the 2AFA foot key. Varley 2SF on the air again about 2100 GMT, will wait the electric chair when operating on 20 mc.

At Maitland, Vex 2AKP has been active on 40 mc, but Bill 2AMM is still QRT. Les 2QB keeps Hamilton on the air with his 20 mc 14400 kc. Harry 2VU has been sending some choice DX on 20 mc. Bob 2AQR and Bill 2VU trying to out-talk each other on 40 mc. Bob says "2VU will win, l.v.l. permitting. Dave 2BZ and Les 2B2 and 2M are still active on the v.h.f. gang in Sydney. George 2AGD only on for Monday night hook-up. Charlie 2AARV seems to be chasing the W.J. J. and is going well. ZD4DK is on holidays in Newcastle and is operating Bill 2XT's Type 3 under call sign VK3WB.

Next meeting of the Hunter Branch will be held on 15th March 8 p.m. at the University of Technology, Newcastle.

### UPPER HUNTER GROUP

During the month of March I can personally account for the members of our small group, that is having been talks in connection with the exception of 2GV. That is they have honoured your scribe by a visit or vice versa and not to mention that they are from the "Gungahlin" area. Of interest is the fact that Roy 2RC, of Denmark, is active again and will be looking for contacts. His absence has been due to a sojourn in Victoria and a visit over his block of land which is not through yet. Tas 2GV heard on 40 mc with a good signal from No. 1 set. Yvonne 2VU is a bit over Tas and let's hear more of you. Nev 20S still away with the broadcasting business and assumes that he is still very keen. Geoff 2VU is starting his new career as a 20 mc and having first neutralising the 807s. I can assure you that they have caps on and not the sort you find in the Gungahlin area. No trouble in working NOH 2AHH on 2 m. at Point Lookout, steady signals both ways in the v.h.f. Autumn Field Day. Good contacts were had with other portable stations. Ken 2ANU busy modifying Command tx for 80 mc and tracking down galvanised conduit and even took time off to get a spill off his horse, which put the programme back a few days. Also let's hear from you. Many stations at Point Lookout on 2 m. Many notes were heard though not worked. 2VU and 2ANU both worked 2DR at Blaney on 30th March. Good signals both ways.

## VICTORIA

Another Annual Meeting has come and gone, a new Council and office-bearers have been elected and a very fine President has retired after five years of sterling service to the VK3 Division. I well remember when Gordon V3K was elected, he regarded it not so much as a job to be done, but that a very great honour had been bestowed upon him and right through his term of office he worked with that thought, giving of his very best to further the advancement of the Division. His calmness in dealing with awkward situations and sometimes terse members was a tonic to all who worked with him. A job well done Gordon, and we are glad to see you are a member of the new Council and taking an interest in the Divisional affairs still.

The new Council is as follows: Fred 3YS (President), Gordon 3TF, Jim 3NY, Bert 3HE, Jay 3UL, Alan 3AEL, David 3ADW, Ken 3AFJ, George 3WJ and Len 3ALD.

The following are the office-bearers for the coming year: President, F. Bail (3YS); Vice-Presidents, G. Dennis (3TF) and L. Robinson (3ALD); Hon. Secretary, J. Lancaster (3JL); Assistant Hon. Secretary, G. Robertson (3WJ);

Hon. Treasurer, J. Marland (3NY); Contest Committee, H. Hodge (3HE) and D. Wardlaw (3ADW); Disposal Committee, G. Dennis (3TF) and R. Bradshaw (3SK); Qualifications Committee, H. Hodge (3HE) and K. Pincoff (3AFJ); Communications, A. Elliot (3AEL); Maintenance, G. Robertson (3WJ) and A. Elliot (3AEL); Excitation, H. Hodge (3HE); T.V. Advisory Committee, L. Moncur (3LN).

Following the Annual Meeting a tape recording was played of an interview between a member of the VK3 Division and Danny Well of his experiences during his rescue from the yacht "Yasme".

The following visitors were welcomed to the meeting, John Strathman, W8HIL; Alan Pierce, W8ZMH; and Bob Reid, a ship's radio operator from Pasadena.

The new members admitted to the Division were: Full Members—J. R. White, 3AJW; W. G. Downing, 3GD; P. J. Dettman; Associates—W. R. Hempel, J. P. Neve, and Junior Associates—D. W. Clowes and R. B. Rosen.

Bob 3ML made fame recently in a television broadcast over ABV Channel 2, in their hobby programme. Bob with all the polish of a

antenna taken across to the opposite bank then across a paddock, hence very little signal was present at the tx location. Despite this, Alf 3IE did a fine job locating the rig in short time followed later by Roy 3ARY and Tom 3AOG.

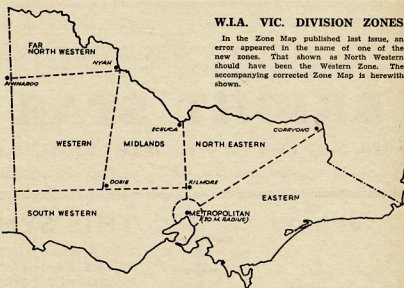
A newcomer noted was Evan 3AAP, who did very well to arrive at the site at about the same time as some of the more experienced hunters. We hope to see Evan with some portable gear at the next hunt, when he looks like being a real danger.

The next tx hunt will be held on Sunday, May 12, when Alf 3IE will be hiding the tx, so come along for a very interesting afternoon's entertainment.

### WESTERN ZONE

Recently our new zone boundaries have been finalised, so we must welcome our new members, and to our former members who are now in the Midland Zone, wish them all the best of luck.

Paid a visit to Jim 3DP recently and had a look over his home-made workshop, which consists of a hydraulic press made out of aircraft landing gear, power hack-saw, drilling machines



## W.I.A. VIC. DIVISION ZONES

In the Zone Map published last issue, an error appeared in the name of one of the new zones. That shown as North Western should have been the Western Zone. The accompanying corrected Zone Map is herewith shown.

veteran t.v. star, gave a short story of Amateur Radio and demonstrated the transmission and reception of signals on his own equipment. He gave a short CQ call and right back popped Bill 3ATW operating mobile at Ferntree Gully, well we won't query that but Bill said he'd be terrible if he didn't put in a few very nice plugs for Amateur Radio, the W.I.A. and the A.O.C.P. class and presented Amateur Radio to the public in a very commendable fashion.

The next general meeting will be held on May 1 and the lecturer will be Mr. Markham, of the Australian Broadcasting Commission on "Outside Broadcast Television Work." Mr. Markham was recommended to us by Mr. Kempton, of the Royal Melbourne Technical College, and his lecture should be of interest to all.

At the June general meeting the lecturer will be Mr. Alec Brown, who was VK1DA during 1956, and he will deliver a lecture illustrated with a collection of excellent slides. This lecture will cover the wild life of the Antarctic as encountered and photographed during Mr. Brown's stay on Macquarie Island.

In July the lecturer will be Squadron Leader White, of the Ground Air Section of the R.A.A.F. His lecture, illustrated with films, will cover ground to air communications and other angles of R.A.A.F. radio work.

### 80 METRE TRANSMITTER HUNT

Fifty-one persons had an enjoyable outing and picnic beside the Yarra at Heidelberg on Sunday, April 7, when Laurie 3ALY, ably assisted by Ray Price, hid the tx which was buried almost at the water's edge, and the

and other items to make a well set-up workshop. So besides his radio, Jim has other interests to keep his spare time well occupied.

Ken 3AKP has not been on the air much of late but is still putting finishing touches on his new rig. He has had a visit from his cober, Ian 4GZ from Charters Towers, so they together have been paying a visit to other Hams in the district. Alan 3HL has erected another antenna, one of his vee beams and it has greatly improved his signal into the States.

Have had news of Chas, ex-3IB, IAC, and who now is VK6AB situated on Davis In Vestition Hills, Antarctica. They had to establish this base so, until they got organised. Chas and his mates had some discomforts to put up with, however they now have comfortable quarters and he is on the air and has already worked a number of DX stations. Conditions have not been extra good, but expects things to improve during the winter months, so is looking forward to many chats to the local chaps here—3AKV.

### MIDLAND ZONE

On 2nd May a zone hook-up will be inaugurated at the kear station to be 7 Mc. at 8 p.m. The proposed band will be 7 Mc. at 8 p.m. Please net with 3FO if possible.

As this will be the initial get-together for the new zone all members and non-members are invited to be there, so make it a success with a big gathering.

For information, especially of non-members, the Midland Zone has just been formed and present official activity is nil. This hook-up is to try and decide when and where the first official meeting can be held. Contact either 3ND or 3FO for further information.

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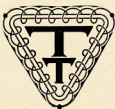
Price depends on the tolerance and frequency required, and will be quoted upon request.

BRIGHT STAR CRYSTALS may be obtained from the following Interstate firms: Messrs. A. E. Harrold, 123 Charlotte St., Brisbane; Gerard & Goodman Ltd., 192-196 Rundle St., Adelaide; A. G. Healing Ltd., 151 Pirie St., Adelaide; Atkins (W.A.) Ltd., 894 Hay St., Perth; Lawrence & Hanson Electrical Pty. Ltd., 56 Collins St., Hobart; Collins Radio, 409 Lonsdale St., Melbourne; Prices Radio, 5-6 Angel Place, Sydney.

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## QUEENSLAND

### PRESIDENT'S ANNUAL REPORT

The following extracts are taken from the President's report of 1966-67. Gentlemen, in presenting this report I do so with a great deal of satisfaction as you will no doubt see the Queensland Division has had a fairly successful year. Credit for this is due to many of you, but I think it is fair to say throughout the year, especially the willing workers on Council. The Secretary, Jim, is to be congratulated on the sterling work he has done.

Membership over the past year has shown a steady increase. Just on 50 new members, including associates, have been taken into the books, bringing the figure to a total of 267.

**Finance.**—Our financial position, gentlemen, is rather healthy and once again reflects great credit on the Treasurer.

Council has met regularly on the second Friday of each month and many problems have been ironed out and important decisions made. Support from Council has been very loyal and each member has shown his willingness to assist in any way possible.

**General Meetings.**—The monthly meetings have been well attended throughout the year and have been very interesting. Pictures and film shows have been presented. The average attendance has been around the 40 mark and Council has received many suggestions from the city member is quite evident by these attendances. It is hoped in the forthcoming year to present something of interest to all members.

**Official Station.**—The past year has seen some very important changes in VK4WJ. In respect of modifications carried out by the station manager, Bert 4AO. Bert has practically re-built both tx's and the Institute scheduled a new mobile, been taken for the station. Slow more transmissions can be expected in the near future. Station Manager Bert is to be congratulated for his efforts in this connection and for the Sunday morning news service provided.

**Sunday Hook-ups.**—The hook-ups have been regular and they have, I am sure, been a most enjoyable experience. It is through this medium that the doings of Division and the needs of the country boy can be attended to speedily.

**A.O.C. Classes.**—The examination were held on 12th October, 1966. Each Friday evening the classes are held from 7 to 8.30 p.m. and the first part of the evening is devoted to the remainder to theory and general discussion. No charge is made for instruction, but students must become associate members of the Division. The classes are held in two classes the Institute has gained 24 associate members. The Class Manager, Stan 4SA, is to be congratulated for his magnificent efforts on this behalf.

It is hoped in the forthcoming year to include correspondence courses for the country chap.

**"QTC".**—The monthly sheet "QTC" has been dispatched regularly and all financial matters have been received through it. Many thanks to John 4JO for all typing work done, not only for "QTC", but for the compilation of news for the monthly bulletin. The official station VK4WJ also to John 4JP for his efforts in printing the paper and to Jim, our Secretary, for his thankless job of postage on each sheet.

**"Amateur Radio."**—This magazine has been received by most members on time throughout the year, and has been published in Australia. The magazine is going on to other States. With Divisional activity many interesting technical articles have appeared monthly, and if any member of this Division was aware of something along these lines, I can assure him it will be appreciated not only by the publishers but by all Amateurs in the State. I hope you will make suggestions to make let us know and we will see what can be done.

**Activities, Palm Beach.**—Last year's Convention at Palm Beach was held on the Queen's Birthday weekend and was a great success. An excellent programme of events was held, and judging by the response it proved a very popular event. Many thanks to the staff, ATN and to all who assisted to make the show a success. A similar convention will be held this year.

**Junior Chamber of Commerce Display.**—The Division in conjunction with the Junior Chamber of Commerce, staged a very interesting display of a working Amateur Station in the basement of the Brisbane City Council. A lot of outside interest was shown, so much so that the Division has recently been informed by the Junior Chamber of Commerce that for next year, this display in the main vestibule of the City Hall, will be held in November, 1967.

and the whole theme of the display will centre around an Amateur Station. To all who made last year's show possible with equipment loaned, operating rosters, and v.h.f. links, I express my thanks on behalf of the Division my heart-felt thanks.

**V.H.F. Hunts.**—Throughout the year the Division has conducted around the city some very popular hidden tx hunts. Quite a good roll-up of v.h.f. boys has been achieved. This has stimulating added interest in v.h.f., it has proved to be another way in which the boys can get together and have fun. Many thanks to John 4JO for all his efforts for the group and to Mrs. Ross for the excellent supplies provided after these events.

**Emergency Committee.**—The opinion was formed by all networking that we should be uniform and Federal Executive has been asked to give it their attention. It is expected that the forthcoming Federal Convention will iron out all problems. There have been three emergencies during the year, two in the rescue of Danny Well, whose life was undoubtedly saved by the co-operation of Amateurs, coastal radio, air-sea rescue, D.C.A., R.A.A.F. and police. Dr. I. Morrison, 4MO, handled an emergency on the beach at Manly. The Emergency Committee treated effectively by radio. During cyclone Clara, the network monitored all bands and W. McDivitt, of Cairns, installed an emergency station. The Emergency Committee. Fortunately we were not affected by this cyclone.

To all who have co-operated in emergency situations and especially to Vince 4VJ as Chairman of the Emergency Committee for the work he has put into this service, I say many thanks for a job well done.

**V.H.F. Group.**—The desire for bigger and better signals has prompted the design of power amplifiers excited by the existing rig and this should prove a most profitable association. The Maleny for 2 mX DX contacts have been made while tests between Warwick and Maryborough have been carried out with encouraging results.

**T.V.I. Committee.**—The committee was formed by the Division for the purpose of assisting all amateurs in the way of problems associated with television interference, harmonic suppression and the elimination of all spurious radiation. Although T.V. is not yet here in VK4, we feel that the committee will assist with our knowledge and conscious of our equipment, to be sure that when this new radiation comes to this country, we will be behind the times with interference problems. The committee at all times will be willing to assist with any problem.

**Inward and Outward QSL Bureaux.**—The Bureau has functioned smoothly over the past twelve months. The Outward Bureau reports the number of cards handled was similar to the previous year. The Inward Bureau experienced no difficulty and approximately the same number was handled as in previous years.

Thanks go out to Jack 4JF for the Inward Bureau handling, and to Miss Claire O'Brien for her efforts once again with the Outward Bureau. Many thanks also to the QSL Service a pleasure to handle by their response to requests for stamps for postage of their QSLs.

**Federal Executive** has secured for us, after constant representation to the authorities: T.V. licenses for Amateurs thus enabling us to branch out into a new field of electronics, and improve our knowledge of the effects of interference to Amateur channels has been raised and through these negotiations by Federal Executive a new kind of license for the amateur has been secured. The frequency of the I.F. channels. The Amateur band 50-54 Mc. has been altered to 46-50 Mc. Throughout the year permission for mobile operation, full license was granted, the only condition being that the licensee must be at his home QTH once in 24 hours. The Federal Executive has secured for us, Territory were obtained. During the past year emergency procedure and plans were drawn up and discussed, the forthcoming International Emergency Day will be a most interesting covered with knowledge to hand in "Amateur Radio" and through Divisional channels, and contacts will be made. Many thanks to all in all, Federal Executive have been very busy with all our problems, and will, I'm sure, continue to do so for our benefit as required.

To our Federal Council, Arthur 4AW, many thanks for assistance and information on Federal matters throughout the year. I am sure that the Division will continue to like to say how pleased I have been to have had the honour of being your Chairman and President. I thank you one and all for your loyal support and wish the Council well in the forthcoming year every success.

—Frank B. Bond, VK4ZKM.

## TOWNVILLE

Quite a large roll-up was experienced at the usual monthly meeting when John 4DD gave a very excellent lecture on antennae and feed line systems. His lecture occupied the full hour and was most interesting. He has promised to answer questions at the next meeting as he had to leave to attend a farewell function, from which he had left to give his lecture as a compromise.

At the next A.O.C.P. examination two members are to face the barrier for Z call signs. "Good luck to you both!" Vern 4LK is being held back by the 1A station, 14 metres, waiting to work them again after a very good performance last year. The wireless bird whistles that Norm 4NT will be leaving for the States, and to stay to tell again and promises to show the local boys how easy it is to work the DX on the cubic quad. Bob 4MP hopes to get a beam up shortly.

Joe 4JH promised the boys if they get the Z call sign he will come on 14 Mc. for them with full power to prove it. It is hoped that Graham 4BX will again take over the learners' class for A.O.C.P. and have a few more to stay to the full distance. Eddie 4WH, our local Secretary, will be in Brisbane by the time this appears and hopes to attend all the meetings and bring back all the news from the big smoke.

## SOUTH AUSTRALIA

The monthly meeting held in March, being the 12th following the Annual Meeting, saw the announcement of office-bearers for 1967, some having been appointed at the previous Council meeting. These were: President, John 4BK; Vice-President, Secretary, Brian 4AC; Treasurer, Jim 5FO; Publicity Officer, Warwick 5PS; Technical Officer, Doc 5MD; Minute Sec., John 5DC; Membership Officer, Les 5AX; Divisional Sub-Ed., Compz 5EP.

To bring you up-to-date the following lists the personnel of various committees, etc.:

**Council:** 5KX, 5CA, 5FO, 5OK, 5MD, 5XU (Federal Councillor and Immediate Past President), 5DC, 5EP, 5AC, 5JG, 5JH, 5JL, 5JN, 5JQ, 5JR, 5JS, 5JT, 5JU, 5JV, 5JW, 5JX, 5JY, 5JZ, 5KA, 5KB, 5KC, 5KD, 5KE, 5KF, 5KG, 5KH, 5KI, 5KJ, 5KK, 5KL, 5KM, 5KN, 5KO, 5KP, 5KQ, 5KR, 5KS, 5KT, 5KU, 5KV, 5KW, 5KX, 5KY, 5KZ, 5LA, 5LB, 5LC, 5LD, 5LE, 5LF, 5LG, 5LH, 5LI, 5LJ, 5LK, 5LL, 5LM, 5LN, 5LO, 5LP, 5LQ, 5LR, 5LS, 5LT, 5LU, 5LV, 5LW, 5LX, 5LY, 5LZ, 5MA, 5MB, 5MC, 5MD, 5ME, 5MF, 5MG, 5MH, 5MI, 5MJ, 5MK, 5ML, 5MN, 5MO, 5MP, 5MQ, 5MR, 5MS, 5MT, 5MU, 5MV, 5MW, 5MX, 5MY, 5MZ, 5NA, 5NB, 5NC, 5ND, 5NE, 5NF, 5NG, 5NH, 5NI, 5NJ, 5NK, 5NL, 5NM, 5NO, 5NP, 5NQ, 5NR, 5NS, 5NT, 5NU, 5NV, 5NW, 5NX, 5NY, 5NZ, 5OA, 5OB, 5OC, 5OD, 5OE, 5OF, 5OG, 5OH, 5OI, 5OJ, 5OK, 5OL, 5OM, 5ON, 5OO, 5OP, 5OQ, 5OR, 5OS, 5OT, 5OU, 5OV, 5OW, 5OX, 5OY, 5OZ, 5PA, 5PB, 5PC, 5PD, 5PE, 5PF, 5PG, 5PH, 5PI, 5PJ, 5PK, 5PL, 5PM, 5PN, 5PO, 5PP, 5PQ, 5PR, 5PS, 5PT, 5PU, 5PV, 5PW, 5PX, 5PY, 5PZ, 5QA, 5QB, 5QC, 5QD, 5QE, 5QF, 5QG, 5QH, 5QI, 5QJ, 5QK, 5QL, 5QM, 5QN, 5QO, 5QP, 5QQ, 5QR, 5QS, 5QT, 5QU, 5QV, 5QW, 5QX, 5QY, 5QZ, 5RA, 5RB, 5RC, 5RD, 5RE, 5RF, 5RG, 5RH, 5RI, 5RJ, 5RK, 5RL, 5RM, 5RN, 5RO, 5RP, 5RQ, 5RR, 5RS, 5RT, 5RU, 5RV, 5RW, 5RX, 5RY, 5RZ, 5SA, 5SB, 5SC, 5SD, 5SE, 5SF, 5SG, 5SH, 5SI, 5SJ, 5SK, 5SL, 5SM, 5SN, 5SO, 5SP, 5SQ, 5SR, 5SS, 5ST, 5SU, 5SV, 5SW, 5SX, 5SY, 5SZ, 5TA, 5TB, 5TC, 5TD, 5TE, 5TF, 5TG, 5TH, 5TI, 5TJ, 5TK, 5TL, 5TM, 5TN, 5TO, 5TP, 5TQ, 5TR, 5TS, 5TU, 5TV, 5TW, 5TX, 5TY, 5TZ, 5UA, 5UB, 5UC, 5UD, 5UE, 5UF, 5UG, 5UH, 5UI, 5UJ, 5UK, 5UL, 5UM, 5UN, 5UO, 5UP, 5UQ, 5UR, 5US, 5UT, 5UU, 5UV, 5UW, 5UX, 5UY, 5UZ, 5VA, 5VB, 5VC, 5VD, 5VE, 5VF, 5VG, 5VH, 5VI, 5VJ, 5VK, 5VL, 5VM, 5VN, 5VO, 5VP, 5VQ, 5VR, 5VS, 5VT, 5VU, 5VV, 5VW, 5VX, 5VY, 5VZ, 5WA, 5WB, 5WC, 5WD, 5WE, 5WF, 5WG, 5WH, 5WI, 5WJ, 5WK, 5WL, 5WM, 5WN, 5WO, 5WP, 5WQ, 5WR, 5WS, 5WT, 5WU, 5WV, 5WW, 5WX, 5WY, 5WZ, 5XA, 5XB, 5XC, 5XD, 5XE, 5XF, 5XG, 5XH, 5XI, 5XJ, 5XK, 5XL, 5XM, 5XN, 5XO, 5XP, 5XQ, 5XR, 5XS, 5XT, 5XU, 5XV, 5XW, 5XX, 5XY, 5XZ, 5YA, 5YB, 5YC, 5YD, 5YE, 5YF, 5YG, 5YH, 5YI, 5YJ, 5YK, 5YL, 5YM, 5YN, 5YO, 5YP, 5YQ, 5YR, 5YS, 5YT, 5YU, 5YV, 5YW, 5YX, 5YY, 5YZ, 5ZA, 5ZB, 5ZC, 5ZD, 5ZE, 5ZF, 5ZG, 5ZH, 5ZI, 5ZJ, 5ZK, 5ZL, 5ZM, 5ZN, 5ZO, 5ZP, 5ZQ, 5ZR, 5ZS, 5ZT, 5ZU, 5ZV, 5ZW, 5ZX, 5ZY, 5ZZ, 5AA, 5AB, 5AC, 5AD, 5AE, 5AF, 5AG, 5AH, 5AI, 5AJ, 5AK, 5AL, 5AM, 5AN, 5AO, 5AP, 5AQ, 5AR, 5AS, 5AT, 5AU, 5AV, 5AW, 5AX, 5AY, 5AZ, 5BA, 5BB, 5BC, 5BD, 5BE, 5BF, 5BG, 5BH, 5BI, 5BJ, 5BK, 5BL, 5BM, 5BN, 5BO, 5BP, 5BQ, 5BR, 5BS, 5BT, 5BU, 5BV, 5BW, 5BX, 5BY, 5BZ, 5CA, 5CB, 5CC, 5CD, 5CE, 5CF, 5CG, 5CH, 5CI, 5CJ, 5CK, 5CL, 5CM, 5CN, 5CO, 5CP, 5CQ, 5CR, 5CS, 5CT, 5CU, 5CV, 5CW, 5CX, 5CY, 5CZ, 5DA, 5DB, 5DC, 5DD, 5DE, 5DF, 5DG, 5DH, 5DI, 5DJ, 5DK, 5DL, 5DM, 5DN, 5DO, 5DP, 5DQ, 5DR, 5DS, 5DT, 5DU, 5DV, 5DW, 5DX, 5DY, 5DZ, 5EA, 5EB, 5EC, 5ED, 5EE, 5EF, 5EG, 5EH, 5EI, 5EJ, 5EK, 5EL, 5EM, 5EN, 5EO, 5EP, 5EQ, 5ER, 5ES, 5ET, 5EU, 5EV, 5EW, 5EX, 5EY, 5EZ, 5FA, 5FB, 5FC, 5FD, 5FE, 5FF, 5FG, 5FH, 5FI, 5FJ, 5FK, 5FL, 5FM, 5FN, 5FO, 5FP, 5FQ, 5FR, 5FS, 5FT, 5FU, 5FV, 5FW, 5FX, 5FY, 5FZ, 5GA, 5GB, 5GC, 5GD, 5GE, 5GF, 5GG, 5GH, 5GI, 5GJ, 5GK, 5GL, 5GM, 5GN, 5GO, 5GP, 5GQ, 5GR, 5GS, 5GT, 5GU, 5GV, 5GW, 5GX, 5GY, 5GZ, 5HA, 5HB, 5HC, 5HD, 5HE, 5HF, 5HG, 5HH, 5HI, 5HJ, 5HK, 5HL, 5HM, 5HN, 5HO, 5HP, 5HQ, 5HR, 5HS, 5HT, 5HU, 5HV, 5HW, 5HX, 5HY, 5HZ, 5IA, 5IB, 5IC, 5ID, 5IE, 5IF, 5IG, 5IH, 5II, 5IJ, 5IK, 5IL, 5IM, 5IN, 5IO, 5IP, 5IQ, 5IR, 5IS, 5IT, 5IU, 5IV, 5IW, 5IX, 5IY, 5IZ, 5JA, 5JB, 5JC, 5JD, 5JE, 5JF, 5JG, 5JH, 5JI, 5JJ, 5JK, 5JL, 5JM, 5JN, 5JO, 5JP, 5JQ, 5JR, 5JS, 5JT, 5JU, 5JV, 5JW, 5JX, 5JY, 5JZ, 5KA, 5KB, 5KC, 5KD, 5KE, 5KF, 5KG, 5KH, 5KI, 5KJ, 5KK, 5KL, 5KM, 5KN, 5KO, 5KP, 5KQ, 5KR, 5KS, 5KT, 5KU, 5KV, 5KW, 5KX, 5KY, 5KZ, 5LA, 5LB, 5LC, 5LD, 5LE, 5LF, 5LG, 5LH, 5LI, 5LJ, 5LK, 5LL, 5LM, 5LN, 5LO, 5LP, 5LQ, 5LR, 5LS, 5LT, 5LU, 5LV, 5LW, 5LX, 5LY, 5LZ, 5MA, 5MB, 5MC, 5MD, 5ME, 5MF, 5MG, 5MH, 5MI, 5MJ, 5MK, 5ML, 5MN, 5MO, 5MP, 5MQ, 5MR, 5MS, 5MT, 5MU, 5MV, 5MW, 5MX, 5MY, 5MZ, 5NA, 5NB, 5NC, 5ND, 5NE, 5NF, 5NG, 5NH, 5NI, 5NJ, 5NK, 5NL, 5NM, 5NO, 5NP, 5NQ, 5NR, 5NS, 5NT, 5NU, 5NV, 5NW, 5NX, 5NY, 5NZ, 5OA, 5OB, 5OC, 5OD, 5OE, 5OF, 5OG, 5OH, 5OI, 5OJ, 5OK, 5OL, 5OM, 5ON, 5OO, 5OP, 5OQ, 5OR, 5OS, 5OT, 5OU, 5OV, 5OW, 5OX, 5OY, 5OZ, 5PA, 5PB, 5PC, 5PD, 5PE, 5PF, 5PG, 5PH, 5PI, 5PJ, 5PK, 5PL, 5PM, 5PN, 5PO, 5PP, 5PQ, 5PR, 5PS, 5PT, 5PU, 5PV, 5PW, 5PX, 5PY, 5PZ, 5QA, 5QB, 5QC, 5QD, 5QE, 5QF, 5QG, 5QH, 5QI, 5QJ, 5QK, 5QL, 5QM, 5QN, 5QO, 5QP, 5QQ, 5QR, 5QS, 5QT, 5QU, 5QV, 5QW, 5QX, 5QY, 5QZ, 5RA, 5RB, 5RC, 5RD, 5RE, 5RF, 5RG, 5RH, 5RI, 5RJ, 5RK, 5RL, 5RM, 5RN, 5RO, 5RP, 5RQ, 5RR, 5RS, 5RT, 5RU, 5RV, 5RW, 5RX, 5RY, 5RZ, 5SA, 5SB, 5SC, 5SD, 5SE, 5SF, 5SG, 5SH, 5SI, 5SJ, 5SK, 5SL, 5SM, 5SN, 5SO, 5SP, 5SQ, 5SR, 5SS, 5ST, 5SU, 5SV, 5SW, 5SX, 5SY, 5SZ, 5TA, 5TB, 5TC, 5TD, 5TE, 5TF, 5TG, 5TH, 5TI, 5TJ, 5TK, 5TL, 5TM, 5TN, 5TO, 5TP, 5TQ, 5TR, 5TS, 5TU, 5TV, 5TW, 5TX, 5TY, 5TZ, 5UA, 5UB, 5UC, 5UD, 5UE, 5UF, 5UG, 5UH, 5UI, 5UJ, 5UK, 5UL, 5UM, 5UN, 5UO, 5UP, 5UQ, 5UR, 5US, 5UT, 5UU, 5UV, 5UW, 5UX, 5UY, 5UZ, 5VA, 5VB, 5VC, 5VD, 5VE, 5VF, 5VG, 5VH, 5VI, 5VJ, 5VK, 5VL, 5VM, 5VN, 5VO, 5VP, 5VQ, 5VR, 5VS, 5VT, 5VU, 5VV, 5VW, 5VX, 5VY, 5VZ, 5WA, 5WB, 5WC, 5WD, 5WE, 5WF, 5WG, 5WH, 5WI, 5WJ, 5WK, 5WL, 5WM, 5WN, 5WO, 5WP, 5WQ, 5WR, 5WS, 5WT, 5WU, 5WV, 5WW, 5WX, 5WY, 5WZ, 5XA, 5XB, 5XC, 5XD, 5XE, 5XF, 5XG, 5XH, 5XI, 5XJ, 5XK, 5XL, 5XM, 5XN, 5XO, 5XP, 5XQ, 5XR, 5XS, 5XT, 5XU, 5XV, 5XW, 5XX, 5XY, 5XZ, 5YA, 5YB, 5YC, 5YD, 5YE, 5YF, 5YG, 5YH, 5YI, 5YJ, 5YK, 5YL, 5YM, 5YN, 5YO, 5YP, 5YQ, 5YR, 5YS, 5YT, 5YU, 5YV, 5YW, 5YX, 5YY, 5YZ, 5ZA, 5ZB, 5ZC, 5ZD, 5ZE, 5ZF, 5ZG, 5ZH, 5ZI, 5ZJ, 5ZK, 5ZL, 5ZM, 5ZN, 5ZO, 5ZP, 5ZQ, 5ZR, 5ZS, 5ZT, 5ZU, 5ZV, 5ZW, 5ZX, 5ZY, 5ZZ, 5AA, 5AB, 5AC, 5AD, 5AE, 5AF, 5AG, 5AH, 5AI, 5AJ, 5AK, 5AL, 5AM, 5AN, 5AO, 5AP, 5AQ, 5AR, 5AS, 5AT, 5AU, 5AV, 5AW, 5AX, 5AY, 5AZ, 5BA, 5BB, 5BC, 5BD, 5BE, 5BF, 5BG, 5BH, 5BI, 5BJ, 5BK, 5BL, 5BM, 5BN, 5BO, 5BP, 5BQ, 5BR, 5BS, 5BT, 5BU, 5BV, 5BW, 5BX, 5BY, 5BZ, 5CA, 5CB, 5CC, 5CD, 5CE, 5CF, 5CG, 5CH, 5CI, 5CJ, 5CK, 5CL, 5CM, 5CN, 5CO, 5CP, 5CQ, 5CR, 5CS, 5CT, 5CU, 5CV, 5CW, 5CX, 5CY, 5CZ, 5DA, 5DB, 5DC, 5DD, 5DE, 5DF, 5DG, 5DH, 5DI, 5DJ, 5DK, 5DL, 5DM, 5DN, 5DO, 5DP, 5DQ, 5DR, 5DS, 5DT, 5DU, 5DV, 5DW, 5DX, 5DY, 5DZ, 5EA, 5EB, 5EC, 5ED, 5EE, 5EF, 5EG, 5EH, 5EI, 5EJ, 5EK, 5EL, 5EM, 5EN, 5EO, 5EP, 5EQ, 5ER, 5ES, 5ET, 5EU, 5EV, 5EW, 5EX, 5EY, 5EZ, 5FA, 5FB, 5FC, 5FD, 5FE, 5FF, 5FG, 5FH, 5FI, 5FJ, 5FK, 5FL, 5FM, 5FN, 5FO, 5FP, 5FQ, 5FR, 5FS, 5FT, 5FU, 5FV, 5FW, 5FX, 5FY, 5FZ, 5GA, 5GB, 5GC, 5GD, 5GE, 5GF, 5GG, 5GH, 5GI, 5GJ, 5GK, 5GL, 5GM, 5GN, 5GO, 5GP, 5GQ, 5GR, 5GS, 5GT, 5GU, 5GV, 5GW, 5GX, 5GY, 5GZ, 5HA, 5HB, 5HC, 5HD, 5HE, 5HF, 5HG, 5HH, 5HI, 5HJ, 5HK, 5HL, 5HM, 5HN, 5HO, 5HP, 5HQ, 5HR, 5HS, 5HT, 5HU, 5HV, 5HW, 5HX, 5HY, 5HZ, 5IA, 5IB, 5IC, 5ID, 5IE, 5IF, 5IG, 5IH, 5II, 5IJ, 5IK, 5IL, 5IM, 5IN, 5IO, 5IP, 5IQ, 5IR, 5IS, 5IT, 5IU, 5IV, 5IW, 5IX, 5IY, 5IZ, 5JA, 5JB, 5JC, 5JD, 5JE, 5JF, 5JG, 5JH, 5JI, 5JJ, 5JK, 5JL, 5JM, 5JN, 5JO, 5JP, 5JQ, 5JR, 5JS, 5JT, 5JU, 5JV, 5JW, 5JX, 5JY, 5JZ, 5KA, 5KB, 5KC, 5KD, 5KE, 5KF, 5KG, 5KH, 5KI, 5KJ, 5KK, 5KL, 5KM, 5KN, 5KO, 5KP, 5KQ, 5KR, 5KS, 5KT, 5KU, 5KV, 5KW, 5KX, 5KY, 5KZ, 5LA, 5LB, 5LC, 5LD, 5LE, 5LF, 5LG, 5LH, 5LI, 5LJ, 5LK, 5LL, 5LM, 5LN, 5LO, 5LP, 5LQ, 5LR, 5LS, 5LT, 5LU, 5LV, 5LW, 5LX, 5LY, 5LZ, 5MA, 5MB, 5MC, 5MD, 5ME, 5MF, 5MG, 5MH, 5MI, 5MJ, 5MK, 5ML, 5MN, 5MO, 5MP, 5MQ, 5MR, 5MS, 5MT, 5MU, 5MV, 5MW, 5MX, 5MY, 5MZ, 5NA, 5NB, 5NC, 5ND, 5NE, 5NF, 5NG, 5NH, 5NI, 5NJ, 5NK, 5NL, 5NM, 5NO, 5NP, 5NQ, 5NR, 5NS, 5NT, 5NU, 5NV, 5NW, 5NX, 5NY, 5NZ, 5OA, 5OB, 5OC, 5OD, 5OE, 5OF, 5OG, 5OH, 5OI, 5OJ, 5OK, 5OL, 5OM, 5ON, 5OO, 5OP, 5OQ, 5OR, 5OS, 5OT, 5OU, 5OV, 5OW, 5OX, 5OY, 5OZ, 5PA, 5PB, 5PC, 5PD, 5PE, 5PF, 5PG, 5PH, 5PI, 5PJ, 5PK, 5PL, 5PM, 5PN, 5PO, 5PP, 5PQ, 5PR, 5PS, 5PT, 5PU, 5PV, 5PW, 5PX, 5PY, 5PZ, 5QA, 5QB, 5QC, 5QD, 5QE, 5QF, 5QG, 5QH, 5QI, 5QJ, 5QK, 5QL, 5QM, 5QN, 5QO, 5QP, 5QQ, 5QR, 5QS, 5QT, 5QU, 5QV, 5QW, 5QX, 5QY, 5QZ, 5RA, 5RB, 5RC, 5RD, 5RE, 5RF, 5RG, 5RH, 5RI, 5RJ, 5RK, 5RL, 5RM, 5RN, 5RO, 5RP, 5RQ, 5RR, 5RS, 5RT, 5RU, 5RV, 5RW, 5RX, 5RY, 5RZ, 5SA, 5SB, 5SC, 5SD, 5SE, 5SF, 5SG, 5SH, 5SI, 5SJ, 5SK, 5SL, 5SM, 5SN, 5SO, 5SP, 5SQ, 5SR, 5SS, 5ST, 5SU, 5SV, 5SW, 5SX, 5SY, 5SZ, 5TA, 5TB, 5TC, 5TD, 5TE, 5TF, 5TG, 5TH, 5TI, 5TJ, 5TK, 5TL, 5TM, 5TN, 5TO, 5TP, 5TQ, 5TR, 5TS, 5TU, 5TV, 5TW, 5TX, 5TY, 5TZ, 5UA, 5UB, 5UC, 5UD, 5UE, 5UF, 5UG, 5UH, 5UI, 5UJ, 5UK, 5UL, 5UM, 5UN, 5UO, 5UP, 5UQ, 5UR, 5US, 5UT, 5UU, 5UV, 5UW, 5UX, 5UY, 5UZ, 5VA, 5VB, 5VC, 5VD, 5VE, 5VF, 5VG, 5VH, 5VI, 5VJ, 5VK, 5VL, 5VM, 5VN, 5VO, 5VP, 5VQ, 5VR, 5VS, 5VT, 5VU, 5VV, 5VW, 5VX, 5VY, 5VZ, 5WA, 5WB, 5WC, 5WD, 5WE, 5WF, 5WG, 5WH, 5WI, 5WJ, 5WK, 5WL, 5WM, 5WN, 5WO, 5WP, 5WQ, 5WR, 5WS, 5WT, 5WU, 5WV, 5WW, 5WX, 5WY, 5WZ, 5XA, 5XB, 5XC, 5XD, 5XE, 5XF, 5XG, 5XH, 5XI, 5XJ, 5XK, 5XL, 5XM, 5XN, 5XO, 5XP, 5XQ, 5XR, 5XS, 5XT, 5XU, 5XV, 5XW, 5XX, 5XY, 5XZ, 5YA, 5YB, 5YC, 5YD, 5YE, 5YF, 5YG, 5YH, 5YI, 5YJ, 5YK, 5YL, 5YM, 5YN, 5YO, 5YP, 5YQ, 5YR, 5YS, 5YT, 5YU, 5YV, 5YW, 5YX, 5YY, 5YZ, 5ZA, 5ZB, 5ZC, 5ZD, 5ZE, 5ZF, 5ZG, 5ZH, 5ZI, 5ZJ, 5ZK, 5ZL, 5ZM, 5ZN, 5ZO, 5ZP, 5ZQ, 5ZR, 5ZS, 5ZT, 5ZU, 5ZV, 5ZW, 5ZX, 5ZY, 5ZZ, 5AA, 5AB, 5AC, 5AD, 5AE, 5AF, 5AG, 5AH, 5AI, 5AJ, 5AK, 5AL, 5AM, 5AN, 5AO, 5AP, 5AQ, 5AR, 5AS, 5AT, 5AU, 5AV, 5AW, 5AX, 5AY, 5AZ, 5BA, 5BB, 5BC, 5BD, 5BE, 5BF, 5BG, 5BH, 5BI, 5BJ, 5BK, 5BL, 5BM, 5BN, 5BO, 5BP, 5BQ, 5BR, 5BS, 5BT, 5BU, 5BV, 5BW, 5BX, 5BY, 5BZ, 5CA, 5CB, 5CC, 5CD, 5CE, 5CF, 5CG, 5CH, 5CI, 5CJ, 5CK, 5CL, 5CM, 5CN, 5CO, 5CP, 5CQ, 5CR, 5CS, 5CT, 5CU, 5CV, 5CW, 5CX, 5CY, 5CZ, 5DA, 5DB, 5DC, 5DD, 5DE, 5DF, 5DG, 5DH, 5DI, 5DJ, 5DK, 5DL, 5DM, 5DN, 5DO, 5DP, 5DQ, 5DR, 5DS, 5DT, 5DU, 5DV, 5DW, 5DX, 5DY, 5DZ, 5EA, 5EB, 5EC, 5ED, 5EE, 5EF, 5EG, 5EH, 5EI, 5EJ, 5EK, 5EL, 5EM, 5EN, 5EO, 5EP, 5EQ, 5ER, 5ES, 5ET, 5EU, 5EV, 5EW, 5EX, 5EY, 5EZ, 5FA, 5FB, 5FC, 5FD, 5FE, 5FF, 5FG, 5FH, 5FI, 5FJ, 5FK, 5FL, 5FM, 5FN, 5FO, 5FP, 5FQ, 5FR, 5FS, 5FT, 5FU, 5FV, 5FW, 5FX, 5FY, 5FZ, 5GA, 5GB, 5GC, 5GD, 5GE, 5GF, 5GG, 5GH, 5GI, 5GJ, 5GK, 5GL, 5GM, 5GN, 5GO, 5GP, 5GQ, 5GR, 5GS, 5GT, 5GU, 5GV, 5GW, 5GX, 5GY, 5GZ, 5HA, 5HB, 5HC, 5HD, 5HE, 5HF, 5HG, 5HH, 5HI, 5HJ, 5HK, 5HL, 5HM, 5HN, 5HO, 5HP, 5HQ, 5HR, 5HS, 5HT, 5HU, 5HV, 5HW, 5HX, 5HY, 5HZ, 5IA, 5IB, 5IC, 5ID, 5IE, 5IF, 5IG, 5IH, 5II, 5IJ, 5IK, 5IL, 5IM, 5IN, 5IO, 5IP, 5IQ, 5IR, 5IS, 5IT, 5IU, 5IV, 5IW, 5IX, 5IY, 5IZ, 5JA, 5JB, 5JC, 5JD, 5JE, 5JF, 5JG, 5JH, 5JI, 5JJ, 5JK, 5JL, 5JM, 5JN, 5JO, 5JP, 5JQ, 5JR, 5JS, 5JT, 5JU, 5JV, 5JW, 5JX, 5JY, 5JZ, 5KA, 5KB, 5KC, 5KD, 5KE, 5KF, 5KG, 5KH, 5KI, 5KJ, 5KK, 5KL, 5KM, 5KN, 5KO, 5KP, 5KQ, 5KR, 5KS, 5KT, 5KU, 5KV, 5KW, 5KX, 5KY, 5KZ, 5LA, 5LB, 5LC, 5LD, 5LE, 5LF, 5LG, 5LH, 5LI, 5LJ, 5LK, 5LL, 5LM, 5LN, 5LO, 5LP, 5LQ, 5LR, 5LS, 5LT, 5LU, 5LV, 5LW, 5LX, 5LY, 5LZ, 5MA, 5MB, 5MC, 5MD, 5ME, 5MF, 5MG, 5MH, 5MI, 5MJ, 5MK, 5ML, 5MN, 5MO, 5MP, 5MQ, 5MR, 5MS, 5MT

to operate in emergency when called upon by the Australian to assume official communications. Our net is to work as a means of "Communication" only, to receive and transmit messages from official sources and not to originate.

Equipment has been obtained through the Disposal Commission from Government sources and found that No. 123 sets were the most reliable for the job. A number of sets on hand and general members will be advised in due course re their allotment and use. These which are for rx and tx are not only, are 12v. input using 5UTG m.o., v.f.o. or xtal, with 807 p.a. plate modulated. Pi output to antenna, battery drain 6 amps. 12v. tx in 100 ohm output for rx and tx filaments only 0.9 amp. The low drain being one of their attractive features, the other being ease of setting for both tx and rx are simultaneously tuned.

It is the intention to obtain sufficient of these units to provide each member who is interested in the scheme with a complete outfit, and the nominal cost will be the member's affair—so you will be hearing more about all this in due course.

Message forms have been printed and procedure adopted and a number of field trials and tests conducted to help iron out any bugs that may be there, as well as to test the antenna for such use, etc. So far tests indicate a good net should result.

Our radio working association who are doing the class this year, are progressing well. Two of them making the grade at the Jan. exam. It's a bit early at the time of writing to have such indication of the runner of the exhibit at the Royal Exhibition, but the gear has been set up and apart from a fault in the v.f.o. link, the rx and tx are working according to plan. Most of the gear there is from Gordon 5XU's shack, which includes 3 tx's one on 40, another on 20 and the other on 20 for v.h.f. "talk back" link. The rx is an 5X28 and doing very well whilst working on 40 and listening at the site, for with so many noisy electrical exhibits nearby, the noise limiter isn't working overtime to make it possible to hear anything.

The antenna is a ZL Special on 20 m., a 100 ft. 40 m. and 4 over 4 driven by a skeleton stilt on 3 m. A large number of ornate QSL cards supplied by Frank 5MZ and Gordon 5XU, decorate the walls and give it a "5XU" look.

Joe 5AJK is going to Melbourne at Easter time—to play cricket above all things—with 15 other members of the club. He is going to 15 places! You all know 10 m. has been hot lately, but you should have heard 5WK "tearling them off" recently, 5 x 9 plus all the way. Now Dave 5MD, having you purchased a new wheel chair or crutches yet? Heard Wal SDF say the other day he had heard "Poor old Dave working 40 m. and 20 m. What cut Wal, he will catch up to you for that."

And then there is "Wandering Chas." We never know where he will hob up next, Chas 5BN means, he has recently moved to Eden Hills, so don't take the call book too seriously fellows for they can't keep up to him. Jim 5W has been trying out a new band and stated was using a 132 ft. Wyndham with a 25 ft. feed line, the whole assembly 4 ft. above ground. Jim 5W was not at all satisfied with other than the feed line dropping vertical to the tx, can only assume he was operating from the bottom of a 21 ft. hole.

Who is Jim? ZS3JV, Salisbury, Southern Rhodesia, is looking for VK contacts on 10 m. Has his beam this way from Glen 5G, 20 m. and 40 m. and he makes a good signal here.

The plum of the month comes from Port Lincoln, where Alf Mack is helping Wal SDF to re-align his antenna. It appears a schooner who lives next to Alf asked him "Is there anything else that could interfere with our wireless other than you?"

#### SOUTH EASTERN DISTRICTS

Our sympathy to Claude 5CH in his bereavement. His father passed away late in the night of a short illness.

Erg 5KU has managed 10 new countries on 14 Mc. c.w. He has been fairly active so deserved them. Stewart 5MS mainly on 19 and 15 m. has been doing some new countries. 5TW has built himself a new modulator, so let's hear it old man. The only other news that is reported by way mostly re v.h.f. which is reported elsewhere.

#### WESTERN AUSTRALIA

At the Divisional meeting for March, 6RU gave a very interesting and instructive lecture on high and low ZL bands. The meeting was held at 11.30 and showed slides of Central and Northern

Australia. He was in charge of the sound recording on the film "Jedda".

In the absence of any new nominations, the existing Council: 6RU, 6PT, 6TP, 6BE, 6MK, 6AG and 6KW, are carrying on.

Milo Lacey, ex-VK6MX, is now in U.S.A. and has the call sign WJDA.

We were pleased to see Dave WAPF in VK6 again and hope he enjoyed his brief stay and wish him happy landings on the rest of his trip.

Sorry to have so little news this month chaps, but as usual radio takes a back seat during the summer months. The "local" bands are almost deserted temporarily, and even the DX band has not been the best lately even this side. However, there are already signs of increased activity on 80 and 40 m., so I hope to gather more news next month.

#### TASMANIA

Could be.

"The Turk, that two-and-fifty king-

Writes not so tedious a style as this."

But, gentlemen, it is ten years since last I columnist—some will say calumnised—in this journal. And it is not true that the period was so barren of good and interesting material.

Remarkable affairs, these annual dinners. Seems that TWI, with many worthy ops. on tap, got under way with a spirited QSO or two as the evening drew on. Bye and bye, pounding on the stairs was heard and someone ran in. Well dressed chap, obviously not a lam, but labouring under the weight of some great emotion. Bushed bridegroom? No, the manager of a nearby picture theatre. About a thousand people were, as he put it, "getting restless" under the "TWO" sign. He had even sound-track for the hollywoodwork out front. Consider, messieurs, the monastery, the Foreign Legion, the acade-ben deion.

You'll be happy to hear that more useful things were done in the course of meeting and dinner at the club house. President Ted TPJ reviewed a worthwhile year which has seen the beginnings of a local search-and-rescue organisation, in connection with which a really small transceiver unit is being developed. In the evening, a local search-and-rescue members; the Olympic Relay expedition; a series of good lectures and, not least, a reasonably healthy social position. In these and other and other spheres, the true also to lively North and North-Western Zones, from which directions a small but welcome party was able to make the trip to Hobart. Our ZLZ carries his years remarkably well!

Council changes include a sort of Churchillian retirement to private membership by those indefatigable old veterans, TPJ, TPJ, and ZLE, who probably think they're going to have less to do. New line up: TGA driver, TCH and TAB, push-pull vice-presidents (TCH reduced as finance-spliter); TGA secretary, and one or two others of us as ex-ballast.

Many will remember TWN's part in organising that most enjoyable tour of the Highlands and Islands, and the fact that Reg, unfortunately, has been in poor health and to him go the wishes of all for a good and speedy recovery. Peter Dunne, whose modesty and modesty of bearing has been restricted to VK7, says he has responded for the last time to the toast "The P.M.G.s. Dearest of the P.M.G.s." and has accepted. This seems to mean that the Institute can now hope to have, not only a life member, but an active one for many years to come.

Like many of us, Sec. 6 has been discovering that "virtue is its own reward." Hon. Sec. applies himself to Hon. Morse Practice for half an hour each Sunday at 0815, 350 K, with no recent indication that he is sending it to ought but the wind. To any who may feel like tackling this relatively untried technique, it can be recommended as a method of transferring information at maximum writing speed with minimum demand upon power, bandwidth and fuss... a big claim, maybe, but it has been found that if you know what I mean, in this matter of Morse proficiency, sirs, an awkward question might well be asked at while his horns are still in the air. In the meantime, the demand that might be made on the performance of low-powered equipment in some cases emergency? (b) How good an operator does one get to be when the start of practice awaits, as it were, the whiff of a flin' mis'it-TTY.

#### NORTH WESTERN ZONE

Judging by the reports received, a very successful Annual Dinner and Ball was held in Hobart, followed by the Dinner.

It is with some distress that I have to report that our Secretary has been in trouble with the Police. It is not the sort of thing I like to make public, so don't go and spread it around. I saw our Secretary in TST, standing on the steps of the Court House laughing and talking with an officer of the law, therefore, it was with some sorrow that I learnt that Sid had committed the crime of parking a laneway. Boy! was he furious at being caught. Says he was only there about a minute.

Our President, Jim TJO, reports that 1 v. sign is coming in from the States, and is the one-eyed monster myself in Burnie the other night. Fair bit of snow with it, though sound was good.

Also have a report of the second field day in the North West. Dennis TDR had the hidden tx and had much fun as the location was on a slight rise round which the road curved, and he was able to sight his boys as they drove around the road, disappeared into the distance, and returned to dive into the scrub on the wrong side of the road.

Ted T2J eventually found Dennis, nearly drove his car over the top of him, I believe, and then after getting his car stuck, got the other boys to help him out, and they still didn't budge.

The April meeting was a week late, so can't report on that. Heard our newcomer Lee 6LC on one Sunday morning after the broadcast of the 1000th hour of the year. Roy TRN also heard from his home station recently too. May I have a new speaker cone, please, Roy. I need a replacement after the speaker I had was damaged. In any case, Chas said the engine had to get away in a hurry, so I took it he was busy, so I got away in a hurry too.

#### HAMADS

1/- per line, minimum 3/-.

Advertisements under this heading will only be accepted from Institute Members who desire to advertise of equipment which is their own personal property. Copy must be received by 8th of the month, and remittance must accompany advertisement. The advertisement is based on an average of six words a line. Dealers advertisements not accepted in this column.

**FOR SALE:** Power supply, 1000v. tapped transformer, 866s and filter. Also P.T. 565v.p.s. tapped with filament windings. 2 x 200 Ma. chokes. £10 the lot. Ring MX1158 (office hours). A. Roudie, Croydon, Vic.

**SELL:** AR7 complete; 14 Mc. Converter; A.W.A. Wavemeter; Palec latest VT Voltmeter, as new; AR7 Manual; R. & H. continuous bar numbers, some bound; various minor equipment; 50 ft. Mast. Retiring, what says? McCullagh, 25 Boyle St., Balgowlah, N.S.W. (XJ 2860)

**WANTED:** Buy or borrow. Circuit Diagram of Eddystone "S640" Com. Rcvr. H. O. Kellas, Thimaba, Vic.

**WANTED:** Comm. Receiver tuning to 30 Mc., such as AR88, HRO or comparable U.S.A. receiver. If desired will trade a BC348P as part payment (xtal osc., double conversion, 14 tubes, a.c. operated). Details and price to A. Roudie, Croydon Way, Croydon, Vic.

**WANTED:** Manual for 108 Mc. III, 2.5 to 3.5 Mc., on portable Transceiver. Also one for 208 C.W. Set. R. Campbell, Box 42, Sorrento, Vic.

**WANTED:** Metal case for BC221 Frequency Meter. F. G. Bail, 60 Shannon St., Box Hill, W.G. WY 2213.

**WANTED:** Xtals in 7 and 3.5 Mc. bands. A. W. Chandler, 1013 High St. Armadale, Vic. (BY 3918)



# Homecrafts

THE LTD

## AMATEURS' BARGAIN CENTRE

### TEST EQUIPMENT

#### Klemt:

V.T.V.M. Model 200.

#### Cossor:

Sweep and Marker Generator Model B23A.

3 Inch C.R.O.

#### Taylor:

Wide Range R.C. Oscillator Model 191A.

#### Palec:

M32 Multimeter.

MX32 "

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VCT/3 Valve and Circuit Tester.

ET4A Valve Checker.

#### University:

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MK1 Multimeter Kit.

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FOR THE BEST IN HI-FI EQUIPMENT VISIT

### Homecrafts' HI-FI CENTRE

Byer "66" Tape Recorder.

B.J. Super 90 Pick-up.

Chapman A.M. and F.M. Tuner.

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Available for 6, 12, 32, 110 and 200 volt D.C. supplies. from £24/7/6 ea.

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Lustraphone LRV59 ..... £17/5/9

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Ronette: B110 ..... 79/7

B5210 ..... £9/3/6

Acos: Mic 35 ..... 55/-

Mic 16 ..... £24/19/6

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Pencil ..... £52/5/-

### RECORDING TAPE

Aurovox Plastic Tape, 1,200 ft. .... 54/4 reel

Collaro Hi-Fi Tape, 1,200 ft. .... 70/- reel

Philips Long Play Tape, 1,700 ft. .... 95/6 reel

Pyral Plastic Tape, 1,200 ft. .... 69/7 reel

B.A.S.F. Plastic Tape, 1,200 ft. .... 67/6 reel

1,700 ft. .... 95/6 reel

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210 ft. .... 21/- reel

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290 LONSDALE STREET, MELBOURNE

FB 3711

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Further details from the Australian Factory Representatives:

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